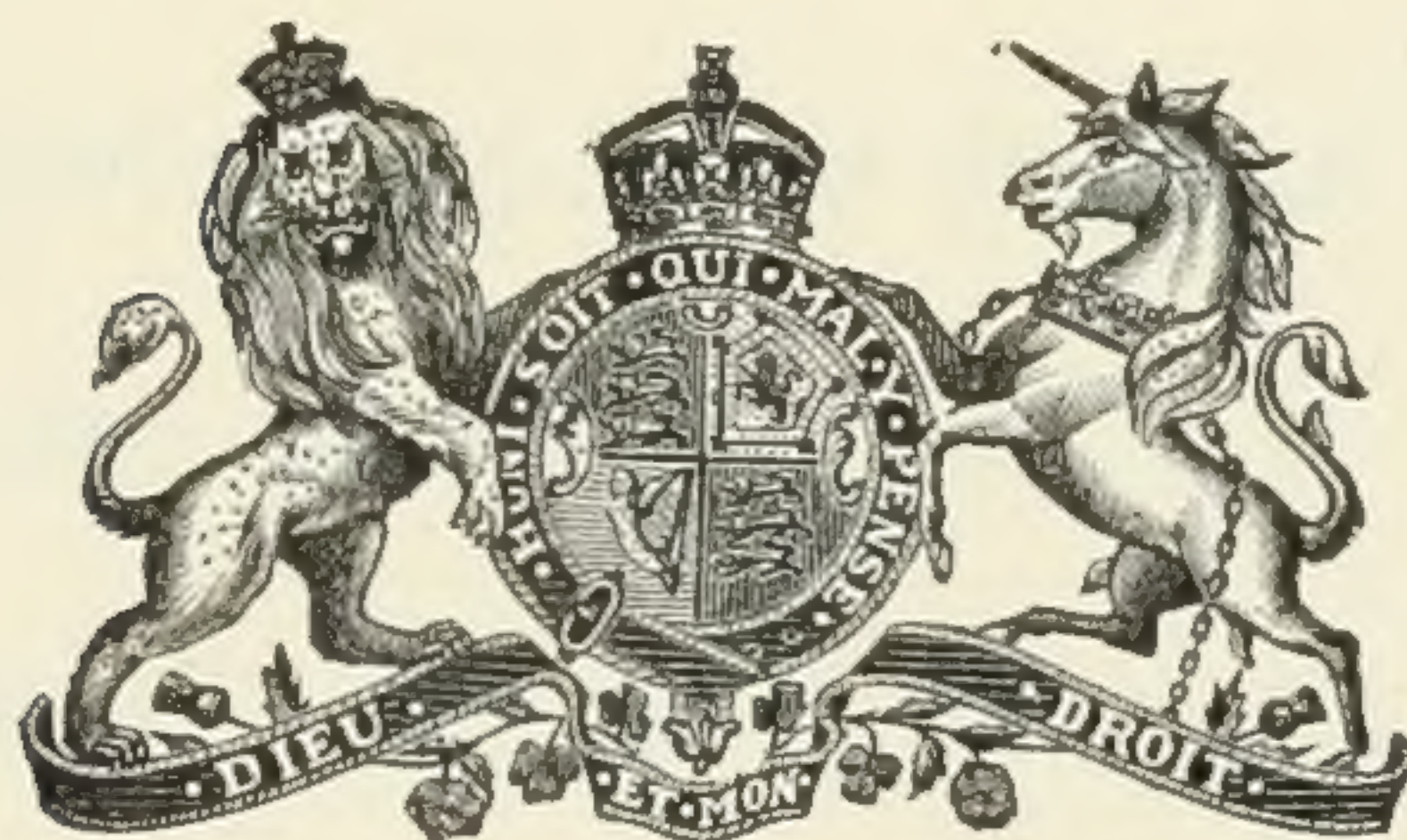


REPORT
OF THE
MINISTER OF AGRICULTURE
FOR THE
DOMINION OF CANADA
FOR THE
FIVE MONTHS ENDED MARCH 31
1906

PRINTED BY ORDER OF PARLIAMENT



OTTAWA
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EXCELLENT MAJESTY
1906

TABLE OF CONTENTS.

Minister's Report:—	PAGE.
I. General Remarks..	v
II. Arts and Agriculture..	vii
Branch of Exhibition Commissioner..	vii
Branch of Dairy Commissioner..	viii
Dairy Division..	ix
Cold Storage Division..	x
Fruit Division..	xi
Extension of Markets Division	xii
Branch of the Seed Commissioner..	xiii
Branch of Live Stock Commissioner	xxv
Poultry Division..	xxx
Experimental Farm Branch..	xxxi
Agricultural and Live Stock Division..	xxxii
Horticultural Division..	xxxiii
Entomological and Botanical Division..	xxxiv
Chemistry Division..	xxxvi
Cereal Division..	xxxviii
Poultry Division..	xxxviii
Health of Animals Branch..	xxxix
Archives Branch..	xli
III. Patents of Invention..	xliv
IV. Copyright, Trade Marks, Industrial Designs and Timber Marks	xlvi
V. Public and Quarantine..	xlvi
VI. Census and Statistics..	xlvii
Appendix No. 1.—The Public Works (Health) Act and Regulations	1
Miscellaneous—	
Appendix No. 2.—Report on Liege Exhibition..	7

TABLE OF CONTENTS

1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
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70	70	70
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73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

REPORT

OF THE

MINISTER OF AGRICULTURE

1905-6

To His Excellency the Right Honourable Sir ALBERT HENRY GEORGE, EARL GREY, Viscount Howick, Baron Grey of Howick, in the County of Northumberland, in the Peerage of the United Kingdom, and a Baronet; Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, &c., &c., Governor General of Canada.

MAY IT PLEASE YOUR EXCELLENCY—

I have the honour to submit to Your Excellency a report of the Department of Agriculture, for the five months ended March 31, 1906.

1.—GENERAL REMARKS.

A synopsis of the operations of the department for the five months ended March 31, 1906, which have been efficiently carried out, is laid before Your Excellency.

The legislation affecting the department during the present session of parliament will appear in my annual report.

By Order in Council, approved by Your Excellency on the 29th day of November, 1905, in virtue of the provisions of Chapter 11, 3rd Edward VII., intituled: 'An Act respecting Infectious or Contagious Diseases affecting Animals,' the Order in Council of March 30, 1904, establishing regulations relating to animals' quarantine, was amended by rescinding sections 45-52, inclusive, and substituting in lieu thereof:—

Section 45.—'All swine must be accompanied by a certificate signed by a veterinarian of the United States and Bureau of Animal Industry, stating that neither swine plague nor hog cholera has existed within a radius of five miles of the premises in which they have been kept for a period of six months immediately preceding the date of shipment, but such swine shall nevertheless be inspected, and shall be subject to a quarantine of thirty days before being allowed to come in contact with Canadian animals.'

Section 46.—'Swine found to be suffering from contagious disease will be subject to slaughter without compensation.' Vide *Canada Gazette*, vol. xxxix, page 1286.

6-7 EDWARD VII., A. 1907

By Order in Council, approved by Your Excellency, under date January 2, 1906, Order in Council under date September 14, 1884, setting apart the buildings and property formerly occupied by the British North American Boundary Commission, and later as a government immigration station, situated on the Red river and comprising lots 31 and 33, in the parish of Ste. Agathe, for cattle quarantine purposes, was rescinded and the lands and buildings above referred to reverted to the Department of the Interior, whence they were originally obtained.

By Order in Council, approved by Your Excellency, on January 10, 1906, the invitation extended to the Government of Canada by the executive committee of the International Exhibition to be held at Milan, Italy, in 1906, was accepted. Preparations are therefore being made for Canada's participation in this event.

By Order in Council, approved by Your Excellency on February 3, 1906, the Orders in Council of May 3, 1880, and January 27, 1882, and all other Orders in Council for the slaughtering of imported swine in bond, and for the carrying and packing of imported carcasses of swine in bond, were rescinded.

By Order in Council, approved by Your Excellency on February 16, 1906, it was decided that wheat flour be purchased to the extent of the sum of \$25,000, and forwarded to Japan for the relief of the sufferers in that country.

Owing to the almost utter failure of the rice crop in many districts of northern Japan, where the inhabitants more or less depended on that product for subsistence, a condition of famine prevailed. It was thought advisable and in the interest of the Dominion, owing to the very friendly relations which were established with the people of the Japanese Empire, in 1903, when Canada participated in the Fifth National Exhibition held at Osaka in that year, that Canada might render assistance to Japan in her distress by furnishing wheat flour out of the bountiful harvest with which the Dominion was blessed during the past year.

By Order in Council, approved by Your Excellency on March 3, 1906, in virtue of the provisions of Section 2, Chapter 30, 62-63 Vic., intituled: 'An Act for the Preservation of Health on Public Works,' the Order in Council of May 13, 1901, making regulations for the preservation of health and the mitigation of disease among persons employed in the construction of public works, was rescinded and new regulations established in lieu thereof. *See appendix No. 1.*

I have to record the death of the late Mr. J. B. Jackson, who for many years served as chief clerk and registrar of copyrights, trademarks, &c. Mr. Jackson had been a faithful servant of the department for forty years.

The vacancy caused by the death of the late Mr. Jackson, I was, fortunately, able to fill by the appointment of Mr. P. E. Ritchie, B.A., B.C.L., barrister, who had been acting registrar during Mr. Jackson's illness, and was appointed by Order in Council approved by Your Excellency, December 29, 1905.

Mr. Ritchie has already proved himself a most efficient and painstaking officer, well fitted to assume control of this important branch of the department.

In my report of last year reference was made to the endeavour to improve the tobacco industry.

SESSIONAL PAPER No. 15

Mr. Charlan, the French expert, has submitted a report of his work during the past five months.

Lectures have been given in tobacco sections with a view to educating the growers to improve the quality of this product, and they have been given advice as to how to proceed with their field labours to obtain better results.

Mr. Charlan is of opinion that Canadian tobacco in general, but more particularly that grown in the province of Quebec, could easily be increased in weight and improved in quality with a little care and attention, making the crop far more remunerative.

Two bulletins have been issued, one treating with the use of hot beds, and the other with the use of fertilizers, in connection with the growing of tobacco. These bulletins have been printed in both French and English and distributed to tobacco growers throughout the country.

Fermentation experiments were carried on during the winter with a view to ascertain the fitness of smoking tobacco grown in the province of Quebec, for manufacturing purposes. Tests were made, and the tobacco used in these experiments consisted of one lot of 'Comstock Spanish,' the other of 'Connecticut Seed Leaf,' both grown at St. Jacques L'Achigan, county of Montcalm, P.Q. Some difficulty was found in procuring good leaf, as it is most desirable to have it as fine as possible.

These tests were somewhat laborious owing to the fact that experienced hands could not be obtained to sort the tobacco prior to fermentation.

The result, however, is very encouraging, and there is no doubt that Canadian tobacco can be fermented and manufactured into smoking tobacco and into ordinary cigars of a fairly good quality, and it is hoped that ere long tobacco growing and manufacture will become one of the industries of the Dominion.

II.—ARTS AND AGRICULTURE.

EXHIBITION COMMISSIONER'S BRANCH.

At the close of the Liège exposition all of the exhibits were packed and shipped to Antwerp and there placed in store.

While the Liège exposition was in progress, the exhibition commissioner took the opportunity of going to London, where he made a thorough inspection of the Canadian section of the Imperial Institute, and a report on its condition, giving his ideas as to what could be done to bring the exhibits and the general installation plan up to date, together with an estimate of the cost.

On December 28, 1905, the exhibition commissioner was instructed to proceed with the changes recommended by him. His first act was to subject the whole place and its contents to a thorough cleaning and painting, which greatly improved the appearance and also added more light. Show cases of modern design have been substituted for those already in use. These new cases are dust proof and the exhibits will remain fresh and clean for some time to come. The different exhibits already installed in the Canadian section were thoroughly overhauled and brought up to date by adding new specimens.

6-7 EDWARD VII., A. 1907

One-half of the lower section has been devoted to a display of our Canadian ores and minerals. We have sought to impress visitors with the abundance of these ores and minerals as found in Canada, by showing good sized quantities in each case, and we have, wherever possible, placed alongside the crude ore or mineral, samples of all the manufactured products obtained from such particular ore or mineral.

The idea of showing raw material and its resulting products is original with Canada and was first carried out at the St. Louis World's Fair. It has been so successful that other countries are now adopting the same plan.

A large space in the institute has been devoted to the display of Canadian grains, grasses and agricultural products generally. The installation of this section is of a highly decorative order and will, it is thought, prove a good drawing card.

Forest products, fish and game, sundry manufactured articles, maps, charts, oil paintings and photographs of Canadian scenery have been liberally distributed throughout the space.

The Canadian section of the Imperial Institute is now thoroughly equipped with a representative exhibit of the natural resources of Canada.

Arrangements have been made for the Canadian exhibit at the Milan exhibition. A Canadian pavilion has been erected and the work of installation is being proceeded with as fast as possible. The exhibition opens May 1, and a full report in connection with the exhibition will be made later.

There is now in preparation an exhibit of Canadian manufactured articles to be installed at the New Zealand International Exhibition, to be held at Christchurch, New Zealand, from November 1, 1906, to April 1, 1907. Twelve thousand square feet of floor space has been set aside by the exposition authorities for the exclusive accommodation of exhibits from Canada. This space was obtained by adding a wing to the main exhibition palace, and from plans received by the department, the New Zealand authorities have allotted us a most desirable location. It is proposed to place this space at the disposal of Canadian manufacturers free of charge, and the government will pay freight charges to New Zealand, install and care for exhibits during the term of the exhibition.

Some fifty manufacturers have applied for space and there is every reason to believe that this exhibit will prove the means of initiating and increasing trade for our manufactured products in the markets of New Zealand.

A full report will be made after the close of this exhibition.

DAIRY COMMISSIONER'S BRANCH.

The five months under review are the least active of any in the year for the work carried on by the Dairy Commissioner's Branch.

A considerable portion of the time of the officers is occupied during the winter months in attendance at the numerous agricultural meetings which are held throughout the country.

SESSIONAL PAPER No. 15

PUBLICATIONS.

The following bulletins of the dairy commissioner's series have been issued since last report:—

No. 8.—Some of the Factors that Control the Water Content of Butter.

No. 9.—Instructions for Testing Individual Cows, with some Notes on the Babcock Milk Tester.

No. 10.—Creamery Cold Storage.

DAIRY DIVISION.

NORTHWEST CREAMERIES.

As the Department of Agriculture could not consistently continue to operate the creameries in the Northwest, with provincial autonomy established, the Dairy Commissioner was instructed to take the necessary steps to withdraw from the management of all the 'government' creameries in Alberta and Saskatchewan. It was learned that the government of Alberta was ready to take over the management of the creameries in that province, and in order to effect the transfer, representatives of the creameries were invited to meet the Dairy Commissioner at Edmonton on the 20th of February last. The meeting was also attended by the Hon. W. T. Finlay, Minister of Agriculture, and other members of the Alberta government. It was finally arranged, to the satisfaction of all concerned, that the twelve creameries which were operated by my department in Alberta in 1905, should in future be controlled by the provincial government.

The use of the cold storage plant at Calgary (the building is owned by the city of Calgary) has been given to the Alberta government at a nominal rental.

The creamery industry has not reached the same importance in Saskatchewan as it has in Alberta. Successful wheat-growers, as a class, have never given much attention to dairying until compelled to do so in order to replenish the fertility of the soil.

There were only four 'government' creameries in Saskatchewan in 1905. The associations were notified in February that my department would not again assume control. I am informed that the Saskatchewan Department of Agriculture will exercise a certain amount of supervision over the operation of the creameries, and give some assistance in the marketing of the butter.

The management of these creameries was continued much longer than it was intended when the work was begun in 1896-97. I have been induced to continue the work from year to year, because it was contended that a withdrawal would mean ruin to many promising organizations, by destroying the confidence which resulted from government control, and which was necessary to tide the associations over the difficult initial period of their existence. Many of the settlers had no previous experience in dairying, the conditions were new and untried, new problems had to be solved, and there was no record of years of successful operation under the prevailing conditions, as there is in the older dairying districts.

6-7 EDWARD VII., A. 1907

Now that there are provincial departments to render assistance, and a more established order of things prevails, there should be no difficulty in continuing the work on a satisfactory basis.

In withdrawing from this field of effort, I am able to assert that no section of Canada has to-day a better organized, better equipped and more promising dairy industry than has the Northwest at this moment, and it has been moulded out of what were in 1897 and 1898 a few practically defunct and bankrupt businesses. Debts have been paid off, new buildings erected, the farms belonging to the patrons have been stocked with cattle, while the returns from the creameries, at least as far as northern Alberta is concerned, were making the foundation of the country's present prosperity.

COW TESTING ASSOCIATIONS.

Following up the work which was begun a year or two ago, looking to the improvement of dairy herds, an effort has been made to promote the organization of cow testing associations, with the result that at the time of this writing ten associations, consisting of twenty or more members, have been organized in the provinces of Ontario and Quebec. The dairy division has not made any effort to organize these associations in particular districts, but has urged the dairymen in general to take up this line of work, and wherever the farmers have taken the initiative my officers have co-operated, and the department, through the Dairy Commissioner, will undertake to do the testing of the milk for the year 1906. By means of such organization the members are enabled to determine the yield and the quality of the milk of individual cows at a minimum of expense, and are thus provided with a basis for herd improvement, which is bound to result in a large increase in the production of the dairy cows of Canada.

COLD STORAGE DIVISION.

ICED BUTTER CARS.

The arrangements have already been made with the railway companies for the service of iced butter cars during the summer of 1906, the service to begin on Monday, May 7, and continue until Saturday, October 20. Cars will be running on fifty-six different routes to Montreal, being an increase over the number operated in previous years. Some readjustment of the routes has been made with a view of giving a better service for shippers of butter.

I have caused it to be announced that parliament will be asked to appropriate a sufficient sum of money to provide for a renewal of the plan of giving bonuses to creamery owners who erect efficient cold storage in connection with their establishments and who comply with certain conditions in the management thereof. A circular outlining the conditions has been sent to all interested in such matters.

THERMOGRAPHS.

Sixty new thermographs have been ordered for use during the season of 1906, so that a larger number of records may be obtained of the temperature in the various compartments where perishable products are carried in the steamships, and also in refrigerator cars carrying butter and fruit.

SESSIONAL PAPER No. 15

FRUIT DIVISION.

The staff of the fruit division has been actively engaged in the inspection of the fruit crop of 1905, with special reference to the export trade. The Montreal inspectors at the close of navigation there were transferred to the packing houses between Toronto and Belleville. The temporary inspectors were dismissed for the season at the end of February.

By the end of March practically all the fruit grown the previous season had been shipped. This, therefore, makes a convenient time at which to compile the statistics of the fruit division, which are given below.

INSPECTION UNDER THE FRUIT MARKS ACT, SEASON, 1905-6.

Number of lots inspected.....	2,813
Number of barrels in lots inspected ..	330,681
Number of barrels inspected ..	11,423
Number of violations of the Fruit Marks Act ..	394
“ “ section 4..	180
“ “ “ 6 ..	157
“ “ “ 7.....	57

CONVICTIONS UNDER THE FRUIT MARKS ACT, SEASON, 1905-6 (BY PROVINCES).

Ontario ..	22
Quebec ..	6
Nova Scotia ..	15
Manitoba ..	1
British Columbia ..	4
Total ..	48

A DOMINION FRUIT CONFERENCE.

The fruit-growers of Canada having petitioned for a Dominion conference, I was pleased, after having satisfied myself that such a gathering must result in much good to an important industry, to authorize the fruit division to undertake the organization of the conference, which was held at Ottawa under the auspices of the Department of Agriculture on the 20th, 21st and 22nd of March. A certain number of delegates were allotted to each province, but the selection of the actual representatives was left to the various provincial fruit growers' associations. The number of delegates from each province was as follows:—

Prince Edward Island ..	2
Nova Scotia ..	4
New Brunswick ..	2
Quebec ..	5
Ontario ..	9
Manitoba ..	1
Saskatchewan..	1
Alberta ..	1
British Columbia ..	4
Total ..	29

6-7 EDWARD VII., A. 1907

The provincial departments of agriculture and the various agricultural colleges of the Dominion, were also invited to each send a representative to the conference. In addition to these the meeting was attended by many prominent fruit-growers, fruit shippers and representatives of allied industries. It was a pleasure to me to act as chairman of this conference, which was in every respect most successful. Resolutions asking for certain amendments to the Fruit Marks Act were unanimously passed. Fruit packages, marketing, fruit statistics and transportation, by steamship and by rail, were the chief subjects of discussion. A verbatim report of the proceedings of the conference will be published for general distribution.

THE EXTENSION OF MARKETS DIVISION.

REPORTS.

A good deal of the time of the officers of the extension of markets division, during the past five months, was devoted to the preparation of material for the annual report of the division, which will be included in the report of the Dairy Commissioner's Branch for the year ending March 31, 1906. The reports of the iced car inspectors, covering the season from May 7 to October 21, 1905, have been carefully gone over and summaries made showing the temperatures of export butter at various stages of transportation from the creameries in Canada to the ports in Great Britain. The reports of the cargo inspectors for the season of St. Lawrence navigation, have also been closely analysed, and statements prepared giving the average temperature of butter when received by the different steamship companies at Montreal and when discharged at ports in Great Britain, and the temperature and condition, during the first two shipping months, of the soft varieties of apples when loaded in the steamers at Montreal and the condition in which these were landed at old country ports. Statistics relating to our export trade in farm products have also been compiled and published.

CARGO INSPECTION AT ST. JOHN AND HALIFAX.

From September 1 to March 31, an inspector was stationed at Halifax, N.S., to report the condition and handling of apples shipped via that port and, during the winter months, a second inspector was employed at the port of St. John, N.B. The cargo inspectors in Great Britain continued at work the year round, but as usual the Montreal staff was dismissed at the end of November.

Owing to the comparative mildness of the weather during the past winter, very few shipments of Canadian apples to Great Britain were injured by frost, whereas in the previous winter season of 1904-5 over twenty-two per cent of the Canadian apples examined by our inspectors at Liverpool and Glasgow had been damaged by frost, either before they had left the shippers' hands or while in transit to the seaboard.

CANADIAN FLOUR TO JAPAN.

The contribution by the Canadian government of \$25,000 worth of Canadian flour for the relief of the famine sufferers in the northeastern part of Japan, was forwarded from Vancouver per steamers *Athenian* and *Empress of India*, sailing on March 5 and

SESSIONAL PAPER No. 15

19, respectively. The flour was put up in double sacks with the following inscription printed on both sides in Japanese: 'Canadian wheat flour for the special use of north-eastern famine suffering people, the gift of the Canadian government.' In each sack there was placed a package of six yeast cakes and ten copies of direction for bread-making, printed in Japanese. The flour was shipped to His Excellency K. Hara, Minister of State for the Interior, Yokohama, on a prepaid bill of lading, and was delivered to the consignee, free of all charges. The total shipment was 19,640 sacks (each weighing 49 pounds net), made up of 14,040 sacks of hard wheat flour milled in Manitoba, and 5,600 sacks from wheat grown and milled in the Okanagan valley, in British Columbia.

SEED COMMISSIONER'S BRANCH.

This branch of the department has for its object increased yield and improved quality of farm crops in Canada through the use of better seed. The work of this branch does not include experimentation with farm crops, or the distribution to farmers of seeds of approved varieties. Rather is it the object to stimulate interest among farmers in the growing and selecting of seeds of superior quality; to adopt such means as may be expedient from time to time so as to secure the distribution, among farmers, of the best seed produced in any district; and to restrict the sale for seeding of seeds that are foul with noxious impurities, through the enforcement of the Seed Control Act, which came into force September 1, 1905.

There is much need in Canada and increasing opportunities for growers of high-class seeds of the more staple crops. As with the breeding of live stock, it would seem evident that the growing and selecting of seeds can be most successfully carried on as a special branch of farming and by farmers who have a liking for the work. The endeavour to create greater interest in the production of high-class seed and to direct the efforts of those farmers who make a practice of growing seed grain in quantity, has been continued. Perhaps one of the most practical ways of giving such encouragement is to create and provide a suitable market for such seeds. Looking to this end, the plan to organize and assist in conducting annual seed fairs has been enlarged upon, of which forty-one have been successfully held during the last five months.

The Seed Control Act is having a wholesome influence in discouraging the marketing for seeding purposes of inferior grades of grass, clover, cereal grains and other seeds. Its enforcement ensures more thorough cleaning of seeds and prohibits the use for seeding in Canada of the cleanings from Timothy, Alsike and Red Clover seeds. Since few farmers will buy seed of cereal grains known to be foul with weeds, the enforcement of the Act practically prohibits the sale of seed grain that is not reasonably clear.

In order to render more efficient service, the seed branch is organized in a way so that experts are provided in each of five districts to carry out the details of the general work of the branch. These district superintendents are under the immediate direction of the seed commissioner, and have charge of the work of the various districts, as follows: The maritime provinces, F. W. Brodrick, B.S.A.; the province of Quebec, Mr. J. C. Côté; the province of Ontario, T. G. Raynor, B.S.A.; the provinces of Manitoba

6-7 EDWARD VII., A. 1907

and Saskatchewan, James Murray, B.S.A.; the provinces of Alberta and British Columbia, W. C. McKillican, B.S.A. The details of operations in these provinces are given later in the report of this branch.

PUBLICATIONS.

Since my last report, there have been issued from this branch, bulletin No. S-2, on the 'Production and Use of Seed Grain,' and a pamphlet entitled, 'Summary of Illustrated Lectures on Seed Grain,' by the Seed Commissioner. These were prepared and 25,000 copies of each were printed and distributed in the provinces of Manitoba, Saskatchewan and Alberta. The matter contained in them pertained specially to the conditions of the west and were distributed en route of the 'Special Seed Train.' The Second Annual Report of the Canadian Seed Growers' Association, which contains much valuable information, including papers and addresses by well-known authorities on seed growing and plant improvement, was edited and 50,000 copies of it were printed and distributed.

SPECIAL EDUCATIONAL CAMPAIGN IN THE WESTERN PROVINCES.

The outbreak of smut in the wheat crop of 1905 in the provinces of Manitoba, Saskatchewan and Alberta, and the serious increase in the presence of noxious weed growth in those provinces, were the cause of much loss to the grain growers.

The most serious cause of infection comes from the smut spores that may be sown with the seed. When in the soil, these smut spores germinate and produce a fungus growth that is capable of causing the young plant to become diseased during its process of germination or before the green leaf develops. As a means to prevent smut, it is important that wheat from a diseased crop be not used for seeding. Rather, should good, strong, well screened seed, taken from a vigorous and fully matured crop be used and sown under the most favourable conditions for the rapid growth of the germ and seedling, with a view to get a well developed green leaf as soon as possible after the germination has taken place.

The use of bluestone or formalin as fungicides to destroy the vitality of smut spores on seed grain has long been in practice. It was thought, however, that the methods adopted in applying these fungicides have, in some cases, been faulty and not conducive to effectiveness of treatment. Thirteen and one-sixth per cent of the crop of 1905, which had been marketed up to March 31, was graded 'Rejected' because of smut. This represents a proportion of smut in the wheat six times greater than the average of the six previous years. Returns from the Grain Inspection office at Winnipeg also show that the proportion of grain graded 'Rejected' on account of weed seeds has been much greater than that of any previous years. It was because of this condition of the output of grain from the crop of 1905 in the three western provinces that it was thought expedient to institute a vigorous campaign for the purpose of stimulating farmers to a more general application of every possible means to combat smut and weeds, and, in that way to prevent a repetition of the losses they sustained in last year's crop.

The plan of utilizing special trains, equipped with material for giving demonstration lectures to farmers on opportune and timely subjects, has been carried out with

SESSIONAL PAPER No. 15

more or less success during the last five years in the corn and wheat-growing states to the south, by the state authorities and the railway companies working in co-operation. This plan of doing educational work had, for some time, been under the consideration of Mr. Whyte, second vice-president of the Canadian Pacific Railway Company, who suggested to this department that if it was thought well to institute a similar campaign in the western provinces, my officers would be assured of obtaining the co-operation of the railway companies of the west. The need for such a special campaign was more clearly made evident very soon after harvesting and threshing the western wheat crop had commenced, and negotiations were immediately entered into with the railway companies. Arrangements were finally completed with the Canadian Pacific and the Canadian Northern Railway Companies by which the said companies provided the necessary cars and hauled them over their lines, making stops of one hour or more, as per approved itinerary. My department, through the Seed Commissioner, advertised the campaign, equipped the lecture cars with material for demonstration lectures and took full charge of the educational work throughout. In order to become better acquainted with the needs of the various districts, prior to visiting them, samples of grain were procured through the kindness of Mr. David Horn, chief inspector of grain at Winnipeg. These were selected by Mr. Horn in a way to indicate the difficulties in each of the districts to be visited by the seed train. From these samples, accurate information was obtained in advance as to the prevalence of smut in the crop and the particular weeds that were giving the most trouble to farmers at the points visited. In this way the information that was most needed by the farmers was anticipated in advance. The subjects dealt with, for the most part, were: 'The importance of using good, strong, vigorous and pure seed grain,' 'The common causes and the best methods of preventing smut,' 'Weeds and their eradication.' In all, 206 meetings were held, covering a period from January 8 to March 6, inclusive, from three to five meetings being held each day. The average attendance per meeting was one hundred and forty, ninety-five per cent of which it was thought were farmers. Out of this entire campaign it was found necessary to cancel only three meetings on account of unfavourable weather, which fact speaks well for the climate of western Canada, and the good management on the part of the railway companies. It was encouraging and exceedingly gratifying to me personally, as I am sure it was to all others who were interested in the campaign, that all of the people in the three western provinces united in an endeavour to make the campaign a success, which went far toward enabling my staff of officers to render more efficient service to the western grain growers in their efforts to suppress a further outbreak of smut or any increase in noxious weed growth.

THE SEED LABORATORY.

The testing of seeds for farmers and seed merchants is an important part of the work of the seed branch. It frequently happens that farmers do not realize, as they should, that only the best obtainable seed is good enough for seeding purposes. The loss that is sustained from the use of impure and immature seeds and seeds of diminished vitality is incalculable. The Seed Laboratory was established four years ago and equipped with the best modern apparatus for seed testing.

As a natural outcome of the enforcement of the Seed Control Act, the number of samples of seeds sent to the laboratory for purity, vitality, or both, has been more than trebled in the last year. This increase was fully anticipated and ample provision made to meet it by enlarging the equipment and increasing the office staff. It is gratifying to be able to state that with the exception of some slight delay in the issue of a few reports on germination tests during the month of February, when the quarters of the seed branch were being changed from the Imperial Building to more suitable accommodation in the Canadian building, the work of seed testing and issuing reports thereon has been efficiently and promptly carried out. This service has thus far been rendered free to both farmers and seed merchants.

The following table gives the number of samples of each of the various kinds of commercial seeds that have been received for test and reported upon to farmers and seed merchants in the various provinces during the last five months:—

NOVEMBER 1st, 1905, TO MARCH 31st, 1906.

Name of Seed.	Prince Edward Island.	Nova Scotia.	New Brunswick.	Quebec.	Ontario.	Manitoba, Saskatchewan and Alberta.	British Columbia.	Totals.
Timothy.	41	17	10	280	229	6	18	601
Alsike.....	15	0	2	119	190	0	11	337
Red Clover.....	21	0	5	280	369	2	22	699
White Clover.....	3	0	0	77	6	0	9	95
Crimson Clover.	0	0	0	2	0	0	0	2
Lucerne	1	0	0	3	17	0	7	28
Vetch.....	0	0	0	0	0	0	3	3
Mixtures.	0	0	0	3	13	0	0	16
Red Top	0	0	0	0	2	0	4	6
Sainfoin.....	0	0	0	0	0	0	0	0
Orchard Grass.....	0	0	0	0	0	0	5	5
Brome.....	0	0	0	0	1	3	0	4
Fescues.....	0	0	0	0	1	0	0	1
Corn.....	0	0	0	0	2	0	4	6
Wheat.....	1	0	0	11	4	140	0	156
Oats.....	2	0	0	19	4	129	0	154
Barley.....	0	0	1	2	1	21	0	25
Millet.....	0	0	0	37	0	0	0	37
Mangel.....	0	6	0	2	0	0	7	9
Sugar Beet.....	0	5	0	2	0	0	0	2
Garden Beet.....	0	0	0	9	0	5	0	14
Turnip.....	0	0	0	1	11	0	1	13
Carrot.....	0	0	0	2	18	9	0	29
Rape.....	2	0	0	1	0	0	0	3
Flax.....	0	0	0	1	0	0	0	1
Onion.....	0	0	0	0	28	0	0	28
Other vegetables.....	0	0	0	0	252	2	9	263
	86	17	18	851	1,148	317	100	2,537

In testing seeds for purity and vitality, the standard regulations for seed testing, which are observed in all countries where such work is done in an extensive way, are closely followed. According to these regulations certain quantities of the different kinds of seeds must be received before a purity test can be made. Two ounces of grass seeds, four ounces of red clover seeds or one pound of cereal grains are required for test when the sample is submitted for analysis in sealed packages, and accompanied with information or complaint that such seeds have been sold in violation of the Seed Control

SESSIONAL PAPER No. 15

Act. With such tests it is desired that the possibility of error be minimized and consequently the quantities used for test are larger when the certificate of analysis under the provisions of the Seed Control Act is to be issued. When, however, the sender desires information as to purity or vitality for his personal use only, a smaller quantity of seeds would suffice. One-half ounce of grass seed, three quarters of an ounce of White or Alsike clover, one and a half ounces of Red Clover, or seeds of similar size, and one-half pound of cereal grains is sufficient for this purpose. It is necessary that all seeds sent for analysis be inclosed in strong paper or cotton bags, together with the name and address of the sender; a number or other designation by which the seeds may be known to him and a statement showing the information desired, whether in respect to purity or vitality. Duplicates of all samples analysed are kept on file in the Seed Laboratory for a period of six months, and may be used for retest in case of dispute between persons interested.

The germination tests are conducted in duplicate simultaneously under identical conditions. The four standard seed germinators, now installed, provide for three hundred tests in duplicate at one time. Two additional germinators are being added, which will increase the capacity for germination work to four hundred and fifty samples. Considering that samples for germination tests have to remain in the germinators between ten and twenty-one days, and even longer for some seeds, it has been estimated that these germinators will provide capacity for an average of thirty samples per day.

COLLECTIONS OF SEEDS FOR DISTRIBUTION.

Any spare time in the Seed Laboratory is devoted to the preparation of reference collections of weed and other economic seeds, for distribution to seed merchants and agricultural institutions. There has been an increased demand on the part of seed merchants for these collections during the last five months. The large collection of one hundred species has been revised and a dozen of the least important replaced by others of the more troublesome weeds. This collection is sold at the nominal price of \$2, which is just sufficient to cover the cost of the trays and the seed vials. The pocket collection contains specimens of all seeds mentioned in the Seed Control Act. They are sold at \$1.25, and are in demand chiefly by the larger seed houses, which provide them to their travelling agents.

INVESTIGATION WORK.

Much valuable information pertaining to conditions of the seed trade has been obtained from investigation work during the past four years and the work is being continued. Details of the information obtained from it will be published in bulletin form in due time.

In a total of 104 samples of Timothy seed obtained for investigation from lots that were offered in the trade during the season of 1905, 54 of them contained seeds of the weeds named in the Act. In 220 samples of Alsike, 207 of them were found to contain species of these weeds, and out of 130 samples of Red Clover, 125 contained one or more of those species of weed seeds.

6-7 EDWARD VII., A. 1907

(a.) WEED SEEDS FOUND IN TIMOTHY SEEDS.

Of the weed seeds named in the Act, Timothy seed contained the following in order of their prevalence: Ribgrass, Canada Thistle, False Flax, Catchfly, Curled Dock, Perennial Sow-Thistle, Chicory and Stinkweed. The Stinkweed was found in one sample only; the Ribgrass in 23. Of those weed seeds not named in the Act, the following were found in greatest numbers: Cinquefoil, Common Plantain, Lamb's-quarters, Sheep Sorrel, Mayweed and Green Foxtail. Ergot from some of the finer grasses was found in 17 out of 104 samples.

(b) WEED-SEEDS FOUND IN ALSIKE SEEDS.

In Alsike seed, the weeds named in the Act were found to be prevalent in the following order: Catchfly, Canada Thistle, False Flax, Curled Dock, Ribgrass, Ox-eye Daisy, Ragweed and Chicory, there being 186 samples out of 220 which contained Catchfly, while one sample only contained seed of Chicory. The seeds of weeds not mentioned in the Act were prevalent in the Alsike seed, according to following: Black Meddick, Sheep Sorrel, Lamb's-quarters, Common Plantain, Mayweed, Chickweed, Green Foxtail, Cinquefoil, Catnip, Shepherd's Purse, Worm-seed Mustard and Peppergrass. Out of 220 samples analysed, 13 of them contained Peppergrass, and 164 contained Black Meddick.

(c) WEED SEEDS FOUND IN RED CLOVER SEED.

In the samples of Red Clover seed, the weed seeds named in the Act were prevalent in the following order: Catchfly, Curled Dock, Ribgrass, Canada Thistle, Ragweed, False Flax, Wild Mustard, Purple Cockle and Chicory. Out of 130 samples tested, 90 of them contained Catchfly, and Chicory occurred in only one sample. Weed seeds, other than those named in the Act, were present as follows: Green Foxtail, Lamb's-quarters, Lady's Thumb, Common Plantain, Sheep Sorrel, Black Meddick, Mayweed, Twitchgrass, Buckwheat, Crabgrass and Catnip. In the 130 samples, Catnip was found in 20 and Green Foxtail in 113.

It should be pointed out that the seed obtained for this investigation work—which was completed in November, 1905—was the product of the seed crop of 1904. The samples were taken during the spring and early summer months of 1905, from various lots that were offered for sale for seeding by retail seed vendors in all of the provinces. On account of unfavourable climatic conditions, the clover crop of 1904 was badly killed out, which rendered conditions for noxious weed growth more favourable. As a result, the clover seed crop of that year was considerably below the average in point of purity, which fact should be considered when studying the above figures. The information obtained from this investigation, however, shows that pernicious weeds are quite general throughout the clover seed producing district in the province of Ontario and that in order to maintain a high standard of quality in the seeds produced, every practicable effort should be made to suppress them and to prevent their further spread.

Dodder seed was found in four samples of Alsike and six samples of Red Clover. This is the first year, since the establishment of the Seed Laboratory in 1902, that Dodder seed has been detected in any sample of clover seed offered in the Canadian

SESSIONAL PAPER No. 15

trade. On tracing up these ten samples, information was obtained that they were taken from lots of seeds that had been imported, some of it coming from Chili, S America. There is some evidence that Dodder may prove to be a serious pest in clover fields in the southwestern part of Ontario. It is known, however, that Clover Dodder will not continue to give trouble in a cold climate, such as obtains in the greater part of Canada, and the extent to which this parasitic plant may become a nuisance in Ontario is yet to be learned.

THE MARITIME PROVINCES.

The principal crops grown in the provinces of Prince Edward Island, Nova Scotia and New Brunswick are grass for hay, oats, wheat, barley and potatoes. For the grasses and cereal grain crops, it has been the custom for many years to import new supplies of seed. In these provinces, the opinion seems to be very general among farmers that larger yields of grain of better quality are obtained from imported seeds than from the home-grown article. There is, however, abundant evidence to show that the seed grain locally grown and which has had the benefit of care and selection is superior to imported seeds. It has therefore been the policy of the seed branch to encourage, as far as possible, the production and selection of home-grown seeds.

During the last five months the district officer, Mr. F. W. Brodrick, B.S.A., has availed himself of opportunities to address meetings of farmers in each of the provinces on the subjects of 'Seed Growing,' 'The benefits that accrue from the use of selected seeds,' and in explaining the provisions of the Seed Control Act.

In the province of Prince Edward Island one seed fair was held at Charlottetown, and six special seed meetings were held at outlying points. In the province of Nova Scotia, seed fairs were held at Truro, Berwick and Antigonish, and in the province of New Brunswick, at Sussex and Woodstock. Four of these seed fairs were started in the spring of 1902, and have been carried on with a fair degree of success every year since that date. The fairs at Berwick and Antigonish, N.S., were held for the first time in the spring of 1906. These seed fairs were controlled by the local agricultural societies. The provincial departments of agriculture furnished each society with a grant for prizes. The seed branch, through the district officer, assisted with the organizing, met the expenses for advertising and supplied trained demonstration lecturers and judges for each of them. The meetings held in connection with the seed fairs and seed meetings were devoted exclusively to the study of the various phases of the seed question. The judging of seeds by means of a score card and the identification of weeds and weed seeds that were found as impurities in the seed of cereal grains, grasses and clovers exhibited, proved to be interesting and instructive and should do much to enable farmers to form a more accurate opinion of the real value of seeds of good quality. In addition to organizing and holding seed fairs, which are necessarily local in their interest and usefulness to farmers, arrangements were made for holding a larger district seed exhibition for the three maritime provinces, which exhibit formed a department of the Maritime Winter Fair at Amherst, N.S. To meet the expenses for advertising and fitting up suitable quarters for the seed exhibit, a grant was given to the executive of the Winter Fair board. On account of this district seed exhibition being

6-7 EDWARD VII., A. 1907

now to the people in the three maritime provinces, a great deal of additional work was required from my district representative, by way of organizing and creating an interest among farmers who make seed growing a special industry.

PROVINCE OF QUEBEC.

During the five months following November 1, 1905, the work of the Seed Branch in the province of Quebec has continued largely educational, the greater portion of that period being spent by the district officer, Mr. Jos. C. Côté, in attending and addressing farmers' meetings and in instructing seed merchants regarding the provisions of the Seed Control Act. As in the maritime provinces, the work of seed inspection proper does not commence before April 1, and in the province of Quebec the seed fairs are held after that date.

Inability on the part of farmers and retail seed vendors to judge the quality of grass, clover and other small seeds, and identify the noxious impurities, would seem to be the principal cause of the trade in inferior seeds in the province of Quebec, as elsewhere. The retail seed merchants have, however, shown a deep appreciation of the Seed Control Act and have taken advantage of every available opportunity to become better acquainted with its provisions, and how it will apply to seeds they have in stock for sale. The district officer has aimed, personally, to come in contact with the individual seed merchants, and, by using various samples and grades of seeds, to demonstrate to them the application of the Act.

Arrangements have been completed for the holding of seed fairs at Sherbrooke, St. Hyacinthe, Trois Rivières and Rimouski. The one at Sherbrooke was organized in 1902. Those at St. Hyacinthe and Trois Rivières in 1905, and one at Rimouski, will be held this year for the first time. A great deal of interest has been taken at these seed fairs in the province of Quebec and much information of value to farmers is brought out in connection with the short courses of seed and grain judging, seed growing and identification of weeds and weed seeds which are conducted in connection with them.

In the lower Ottawa and St. Lawrence valleys, considerable Timothy seed of excellent quality is grown, but the farmers of Quebec have not taken up the growing of clover seeds in quantity. Of the latter seeds, they are dependent for their supply largely on the province of Ontario, where the production of clover seed is an important industry and a profitable crop. It is quite well known that the greater part of the agricultural sections in the province of Quebec is almost, if not quite as well, suited to the growing of clover seeds as is the province of Ontario, and it is believed that if the farmers in Quebec would undertake to grow clover seed in quantity, the area sown to clover each year would be greatly increased, much to the advantage of the farmers, both directly and because it would have a decided influence in gradually improving the fertility of their farms.

During the season of 1905 an endeavour was made to create an interest in clover seed growing. Several farmers in various parts of the province were induced by Mr. Côté to set aside a portion of their clover crop for seed. They were instructed to pas-

SESSIONAL PAPER No. 15

ture or to take the first cutting at about June 20, leaving the second crop for seed. To hull the seed they were advised to use an ordinary threshing machine and put the harvested crop twice through it. Reports have been received from five of the farmers who carried out this plan of growing and threshing clover seed, and all of them show that the results were entirely satisfactory. The yield of Red Clover seed of good quality varied from 120 to 240 pounds per acre. This would represent a value of between twelve and twenty-four dollars per acre. This is considered rather below the average yield that might reasonably be expected, and it is thought that the crop may be grown in the province of Quebec with no more danger from failure, taking the average of years, than is sustained by the farmers in the province of Ontario.

THE PROVINCE OF ONTARIO.

Since my last report, the work that has been done by this branch in the province of Ontario has included an inspection of the methods of storing and preserving seed corn, an inspection of the clover seed crop that was being threshed during November and December, attending farmers' institute meetings and seed fairs, and the work of official inspection, which, in the province of Ontario, has to be commenced about March 1.

During the last three years many complaints have been received from farmers regarding the quality of seed of ensilage corn sold in the trade. The results of investigation work made it clear that much of the seed corn put on the market in the spring of 1904 and 1905, in particular, was of low vitality. Until within the last two or three years our supplies of seed corn have come very largely from the corn-growing states to the south. It was thought that better results could be had if the growing of seed corn were encouraged and supplies of northern-grown seed corn created. The efforts of the Seed Branch in this direction have been fruitful of good results. It would seem, however, that much of the loss in vitality sustained by seed corn arises from improper storage during the winter months. Seed corn should be thoroughly dried before winter sets in, else the vitality of the seed will suffer from frost. It is necessary that it be kept dry, since any accumulation of moisture by condensation, or otherwise, exposes the seed to danger. On account of the quantity which has to be stored over winter by corn-growers, who grow seed corn in quantity for sale, the problem of suitable storage is a very important one, not only to the growers, but to the farmers who are depending on them for supplies of seed. Once the corn in the ear is thoroughly dry, it is not difficult to keep it in first-class condition throughout the winter, when only a small lot is to be stored, and for this reason it is much to be recommended that the seed merchants and farmers obtain their supplies of seed directly after harvest. They may be able to keep the smaller quantity in the ear, stored under perfect conditions. It should be dried thoroughly, kept dry and well ventilated, and the vitality will not be impaired. The greater part of November was spent by Mr. Raynor in travelling through the corn and clover seed producing districts, inspecting the methods of storing seed corn and giving instructions as to the best methods of storage, in order that it be kept in perfect condition.

The prices paid to farmers for clover seed during the time of threshing ranged from \$6 to \$7.50 per bushel, according to the quality of the seed. Taking the 1905 crop

6-7 EDWARD VII., A. 1907

as a whole, the quality of the seed was above the average. The rank, early growth of both Alsike and Red Clover resulted in the natural suppression of weed growth, and, in consequence, the per cent of noxious weed seeds has been very much less than during the preceding year. The discrimination in price of fifty cents to \$1.50 per bushel in favour of good, pure seed, may be said to be, in part, the result of the Seed Control Act, and should do much to stimulate to an application of methods of exterminating noxious weed growth.

At the farmers' institute meetings, particular attention was given by the district officer to 'Noxious weeds, their spread, control and eradication,' 'Seed growing and seed selection,' and the Seed Control Act. A number of the seed fairs in the province of Ontario have been continued annually for over thirty years under the general guidance of the Provincial Department of Agriculture. On request from some of the agricultural societies, assistance was rendered in organizing and holding seed fairs according to the general plan that had been adopted in the other districts. These were all successfully carried out, and will doubtless be continued. It is expected that a larger number of these seed fairs will be held during the next year.

Observations from the seed inspection work, thus far, would indicate that never before, in the province of Ontario, has the quality of grass and clover seeds offered in the trade been so good. One of the difficulties in maintaining a high standard of quality in these seeds has been, and, to some extent, still is, that the competition in the trade among the retail seed vendors is too great. Grass and clover seeds is an article the real value of which is difficult to judge from appearances. Excessive competition is apt to be restricted too largely to prices, much to the detriment of the quality, and, consequently, the real value of the seed offered for sale. In many of the towns of three thousand inhabitants, fully a dozen of the merchants are dealing in clover seeds. These include grocers, hardwaremen, druggists, flour and feed merchants, agricultural implement agents, millers and grain merchants. The margin of profit to the merchant handling grass or clover seeds is not large in any case, but, as a rule, there is more profit to the retail vendor from the seeds of inferior quality and cheaper grades than from the sale of the number one article. The inspector reports a manifest desire on the part of nearly all seed merchants to conform with the provisions of the Seed Control Act, and there is every reason to believe that the conditions of the seed trade in the province of Ontario show considerable improvement.

MANITOBA AND SASKATCHEWAN.

The serious loss sustained by the western grain growers on account of the large increase in noxious weed growth and the outbreak of stinking smut in the wheat crop of 1905, was more clearly made evident from the returns of the Winnipeg Grain Inspection Office during the last five months. The proportion of wheat graded 'Reject' on account of the presence of foreign seeds, principally Wild Oats, Ragweed and Cockle, is more than treble of that of any previous year. Undoubtedly the prevalence of smut is largely due to the use, in the spring of 1905, of shrunken and otherwise inferior seed from the rusted crop of 1904, and of inefficient methods of treating the seed to destroy smut. Shrunken seed and seed that is weak in vigour produce weak

SESSIONAL PAPER No. 15

plants, and these are more subject to attack from the smut and other diseases than vigorous plants from strong plump seed. The necessity of awakening an interest and of stimulating western farmers to an intelligent application of the best methods of combating smut and controlling weed growth is more apparent at this time than ever before.

This branch of my department solicited the co-operation of the various other factors and forces in the west in an endeavour to inaugurate seed fairs and field competitions among growers of seed grain, to be conducted under the immediate direction of the agricultural societies. The object of field competitions is to encourage the growing of grain on specially prepared and clean land for the purpose of seed as distinguished from grain for milling. It is planned to have these competitions restricted to fields of not less than ten acres en bloc, and judged directly before harvest from the standpoint of utility for seed purposes. Arrangements for this work have, thus far, been only tentatively made, but it is hoped and expected that they will be completed and the work continued over a period of years.

The inauguration of seed fairs is a new feature of work in the western provinces, and those that have been held during the recent months have been fully successful, and proved to be convenient media for the sale and distribution of the best seed produced in any locality. The plan of holding seed fairs during the winter months is especially acceptable to the agricultural societies and farmers of the western provinces, because their annual exhibitions are, as a rule, held during the summer months, before the crop of the season is ready for harvest. In consequence, the efforts of agricultural societies to encourage proficiency in grain production through offering prizes for grain at their annual exhibitions have not been fruitful of complete success. Further, the winter season is the time when farmers look to getting their supplies of seed grain and when those who have good seed for sale are endeavouring to dispose of it. Judging at the seed fairs has largely been done by score card, which is attached to the exhibit of grain, for the inspection of any person in attendance. Should noxious weed seeds be present in any of the seed that is judged, the name of the weed is plainly written on the score card. The judging in each case is done on the basis of value for seeding purposes, in consequence, greater importance is placed on purity of variety and freedom from weed seeds than would be given were the milling quality of the grain only considered.

The seed fair held at Brandon, February 28 and March 1, is provincial in character. At this fair there was represented for sale 37,245 bushels of grain, 11,360 pounds of grass seed, 250 pounds of Manitoba-grown Red Clover seed and some flax seed. A catalogue was issued by the association, giving the names and addresses of the exhibitors, the amount of seed held for sale and the price quoted for same.

An attractive feature at many of the seed fairs was the exhibits of grain grown from registered seed, for which the Canadian Seed Growers' Association provided silver medals, to be awarded as special prizes.

In the province of Manitoba, seed fairs have been arranged in co-operation with the agricultural societies, at Carman, Gilbert Plains, Swan River, Dauphin, Virden, Morden, Manitou, Hartney, Portage la Prairie, Killarney, Brandon and Neepawa; and

6-7 EDWARD VII., A. 1907

in the province of Saskatchewan, at Grenfell, Wolseley, Churchbridge, Saltcoats, Regina, Alameda and Gainsboro'.

The 'Seed Selection Special' train which toured the western provinces between January 8 and March, has had the excellent effect of awakening interest in the importance of using good, well screened and fully matured seed grain, suppressing weeds and combating smut. The work in connection with collecting material for demonstration lectures, fitting up the lecture cars and advertising the campaign, occupied much of Mr. Murray's time during the winter months.

PROVINCES OF ALBERTA AND BRITISH COLUMBIA.

Since the first of November, the work in the provinces of Alberta and British Columbia has consisted largely in organizing seed fairs and field competitions among growers of seed grain, and in the inspection of seed offered in the trade.

Eight of the agricultural societies in the province of Alberta were induced to hold seed fairs. These were all successfully conducted under practically uniform regulations (similar to those which were adopted for the seed fairs in the provinces of Manitoba and Saskatchewan), by the societies at Edmonton, Didsbury, Olds, Innisfail, Lacombe, Magrath, Lethbridge and Okotoks.

Mr. W. C. McKillican, the officer in direct charge of this work, had the prize lists that were supplied to him by the agricultural societies and the regulations to govern the seed fairs, after being approved by them, printed and distributed, together with a circular letter to each member of the societies that asked for co-operation in the work. The seed fairs were all held during the month of February. There was a large number of exhibits of seed grain and a good attendance of deeply interested farmers at each fair. Afternoon and evening meetings were held at each place, when demonstration lectures on seed growing, seed grain judging, the importance of using good seed, smut and smut preventives were given by two experts who were provided by this branch.

Arrangements for the field competitions are as yet incomplete. The objects and plans of this work in the province of Alberta are identical with those in Manitoba and Saskatchewan.

During March attention was given to the inspection of seeds offered in the trade, particularly in British Columbia. Practically all the sellers of seeds in that province and the principal centres of trade in Alberta were visited. At every visit of the inspector, the Seed Control Act was explained and discussed. Many samples of the seeds offered for sale were taken and forwarded to the Seed Laboratory at Ottawa to be tested. The information obtained from tests of these seeds is desired for publication for educational purposes. It is proposed to arrange the facts obtained from this investigation into the condition of seed trade in the province of British Columbia and have the same printed in bulletin form for distribution.

The work of testing seeds for purity and vitality is a most important and much needed service which this branch of the department is able to render to the farmers of the extreme west under considerable disadvantage to them on account of the time required in the transit of samples of seeds and of the reports thereon, to and from Ot-

SESSIONAL PAPER No. 15

tawa. Requests have already been made for the establishment of a branch seed testing station at a convenient centre in the far west. This is a matter that deserves consideration.

The itinerary of the special seed train, with the staff of lecturers, included twenty-four farmers' meetings in the province of Alberta between January 15 and 22. More than twenty-seven hundred farmers visited the seed train and listened with a great deal of interest and profit to the illustrated lectures given in the cars. From this work there is already good evidence of beneficial results in awakening an interest in the advantages and the ultimate economy of using the best obtainable seeds of all kinds of farm crops.

LIVE STOCK COMMISSIONER'S BRANCH.

The work of the Live Stock Branch during the above period has consisted in the conducting of live stock instruction classes, the distribution of pure-bred stock by means of co-operative auction sales, and the holding of winter fairs. In addition to this, a commencement has been made in the official inspection of pure-bred dairy cows in connection with yearly records of performance, according to a system agreed upon by a number of the breed associations and the Department of Agriculture. Reports and Bulletins have been prepared and issued.

1. Instruction in Animal Husbandry—

Live stock instruction classes, conducted along the lines of farmers' institutes, with demonstrations of live animals, were held in each of the provinces. A series of meetings conducted by the branch had been completed in Nova Scotia just prior to the date covered by this report. A course covering some seventy meetings was in progress in New Brunswick at the beginning of November, 1905, these continuing until the fifteenth of that month.

In December, four expert stockmen and lecturers were sent into Prince Edward Island to conduct live stock judging classes. These, which were the first classes held within the province, extended over a period of five days. They were well attended and keen interest taken in them.

From November 15, 1905, until February 10, 1906, three members of the live stock staff were placed at the disposal of the Superintendent of Farmers' Institutes for Ontario.

Four institute speakers and expert judges of live stock were sent to Manitoba in February and March to assist with the annual conventions and judging schools. A convention was held at Brandon in connection with the Winter Fair and Stallion Show instead of at Winnipeg, as in former years. Large and well-attended judging classes and meetings were held at Killarney, Neepawa and Portage la Prairie to complete this series.

During February and March, stock instruction classes have been in progress in Alberta and Saskatchewan, these meetings extending into April in the latter province. Seven expert stockmen were supplied by the Live Stock Branch to the provincial de-

6-7 EDWARD VII., A. 1907

partments of agriculture for this work. At a greater number of these meetings demonstrations of animals were made a feature; the attendance was generally good, and in some cases reached two hundred.

A series of farmers' institute meetings was conducted in the province of Quebec in February. In all one hundred and fifteen meetings were held, including eighty in French districts and thirty-five in districts of English-speaking people. The French speakers, eighteen in number, including twelve regular and six supplementary men, were divided into four delegations. Four regular and three supplementary English speakers were divided into two delegations. The meetings being well advertised, and the weather fine, the attendance was invariably large. From the deep interest manifested it is safe to conclude that the information imparted will have a telling influence for good on the agricultural practice of the province.

2. *Winter Fairs*—

Winter fairs, which had been organized largely by this branch in previous years, were held at Guelph and Ottawa, Ont., and at Amherst, N.S. Assistance was given this year, as previously, to develop the educational features as much as possible. At the Maritime Winter Fair, Amherst, all of the judges and most of the lecturers were supplied by the Live Stock Branch.

3. *Auction Sales*—

Co-operative auction sales were organized and conducted under the auspices of this branch in Nova Scotia, Quebec and British Columbia. At the Nova Scotia sale held at Amherst, thirteen males and seven females, chiefly of the beef breeds, were disposed of, at an average price of \$48 for the females, and \$70 for the bulls.

Four sales were held in the province of Quebec at the end of March and beginning of April. At these 106 pure-bred swine of the bacon breeds, including 66 boars and 40 sows, were distributed at an average price of about \$19 per head. These animals were carefully selected by the department. Most of the males and a portion of the females were purchased by circles of agriculture and farmers' clubs for the general benefit of their members. Much is expected from this distribution in the improvement of the class of hogs marketed from the province of Quebec.

The sale in British Columbia was the first co-operative auction sale ever held by the breeders of the province, and was organized and carried through largely by the representative of the Live Stock Branch, appointed last year to take charge of live stock work in that province. The offerings consisted of some seventy head of both beef and dairy breeds of cattle. Both males and females were disposed of at an average of about \$70 per head.

4. *Provincial Live Stock Associations*—

Two provincial live stock associations were assisted into life by the Live Stock Branch during the past winter. In British Columbia the old Live Stock and Dairy-mens' Association had become almost defunct. This was divided, and with the aid of the representatives of this branch a new live stock association was formed. Already this association has held a very successful co-operative auction sale of pure-bred cattle

SESSIONAL PAPER No. 15

and a stallion show. In addition to the kind of work already accomplished, they propose in future to hold winter fairs along educational lines, as is done in the eastern provinces.

Substantial aid was rendered to the newly-formed Stock Breeders' Association of the province of Saskatchewan. This association will hold a fat stock show and bull sale during the spring of 1906.

5. Record of Performance—

A commencement has been made in the yearly testing of pure-bred dairy cows for production of milk and butter fat. Following are the rules and regulations governing the test, also the standard for registration for the Ayrshire and Jersey breeds:—

RULES AND REGULATIONS.

Scope of Tests—

All tests will be for a period of 365 consecutive days.

Eligibility of Animals—

All animals entered for the test must previously be registered in the Canadian Herd Book, for the breed to which they belong.

Classification of Animals—

Cows from 2 to 3 years old shall be in a class known as 2-years-old.

Cows from 3 to 4 years old shall be in a class known as 3-years-old.

Cows from 4 to 5 years old shall be in a class known as 4-years-old.

Cows 5 years old and over shall be in a class known as mature.

In the 4-years old class and the mature class, no cow will be accepted for entry if the beginning of her previous lactation period was more than fifteen months before the commencement of test. Every cow under test must drop a calf within fifteen months after the beginning of her testing period, in order to qualify for registration of performance.

No milk from a second freshening within the 365 days will be considered in a test.

Duties of Owner—

The owner of a cow entered in the test shall weigh, or cause to be weighed, each milking, and keep a correct record of the same on forms furnished for the purpose. About the middle of each month he shall take a composite sample from all milkings of three consecutive days, according to directions. These samples must be expressed to the official tester, as instructed, at the expense of the owner.

At the end of each month the owner shall report on forms furnished for the purpose:—

(a) A record of the weights of each milking, with the total yield of milk from each cow for the month.

6-7 EDWARD VII., A. 1907

(b) An approximate statement of the amount and kinds of feed given, and data concerning stabling and care given the animals.

At the end of the year the owner shall send on forms furnished for the purpose, a compiled report of the year's milk record taken from the monthly reports and sworn to before a notary public or justice of the peace.

The owner of a cow entered in the test shall provide board and lodging for the Inspector during his official visits and shall convey him, when leaving, to the railway station, or the next farm to be visited, free of charge. •

Duties of Inspectors—

An inspector will visit the stable at least four times during the year, at irregular intervals and unannounced. He shall remain for at least two full days, covering all the milkings of that period, at each visit. During this time he shall weigh the milk of each cow under test, at each milking, and take samples of each for a composite sample for a Babcock test. These tests shall be the basis for computing the record. He shall see that the samples are in no manner interfered with; when not under the inspector's eye the samples must be under lock and key or sealed. The inspector may insist upon only one of the animals under test being milked at a time during inspection.

The inspector shall take a copy of the owner's milk record for the two days immediately preceding his visit. Dates of calving, service, &c., must be recorded by him. As complete a statement as possible of the feed given should be reported. Any sickness of cows and other disturbing influences shall be noted. If such sickness of an animal should occur at the time of a visit the inspector may defer the test of this animal to another date.

The inspector must send to the Live Stock Branch of the Department of Agriculture, as soon as possible after each visit, a report of said visit on forms furnished for the purpose.

Monthly Samples—

As entries for tests are received by the secretaries of the breeders' associations, the name of the owner and number of animals entered will be sent to a qualified tester with whom arrangements have been made, authorizing him to make tests by the Babcock method of the monthly samples of the milk of each cow entered.

Monthly reports of these tests, on forms furnished for the purpose, must be sent by the tester of the Live Stock Branch of the Department of Agriculture.

The expense of testing these monthly samples must be borne by the Canadian Association for the breed to which the animal belongs.

A report of the performance of each animal will be forwarded to the Secretary of the Canadian Association representing the breed at the conclusion of the testing period.

The Dominion Department of Agriculture is undertaking the supervision of these yearly tests of cows only through the various breed associations. Only such cows will be tested as are of the breeds, whose respective associations have officially recognized the tests as outlined, and have agreed to publish in connection with their Herd Book the records of the animals fulfilling the standards required.

SESSIONAL PAPER No. 15

Application for Test—

Application for the test must be made to the Secretary of the Canadian Association for the breed to which the animal belongs, and accepted by him as eligible.

Upon receipt of said application, signed by said secretary, the Live Stock Branch of the Department of Agriculture will forward to the address of the applicant blank forms and other information and arrange for official inspection.

The above rules and requirements are subject to change at the discretion of the Dominion Minister of Agriculture..

STANDARD FOR REGISTRATION OF AYRSHIRE CATTLE.

Bulls.—Admitted after having four daughters in the Record of Performance, each from a different dam.

Cows.—Admitted after fulfilling the following requirements of production and breeding as supervised by the Live Stock Branch of the Dominion Department of Agriculture.

All cows admitted must equal or exceed both the records specified below:—

	Lbs. milk.	Lbs. butter fat
Two-years-old class.	5,500	198
Three-years-old class	6,500	234
Four-years-old class	7,500	270
Mature class	8,500	306

The per cent of butter fat shall be determined by Babcock test.

Year's Milk Record.—If the test be commenced the day the animal is two years old or previous to that day, she must produce within 365 consecutive days from that date, 5,500 pounds of milk. For each day the animal is over two years old at the beginning of her year's test, the amount of milk she will be required to produce in the year will be determined by adding 2·75 pounds for each day to the 5,500 pounds required when in the two-years-old class. This ratio is applicable until the animal is five years old, when the required amount will have reached 8,500 pounds, which will be the minimum amount of milk required of all cows five years old and over.

Year's Butter Fat Record.—If the test be commenced the day the animal is two years old or previous to that day, she must produce within 365 consecutive days from that date, 198 pounds of butter fat. For each day the animal is over two years old at the beginning of her year's test, the amount of butter fat she will be required to produce in one year will be determined by adding ·1 (one-tenth) of a pound for each such day to the 198 pounds required when in the two-years-old class. This ratio is applicable until the animal is five years old, when the required amount will have reached 306 pounds, which will be the minimum amount of butter fat required of all cows five years old and over.

Every cow accepted for registration of performance must drop a calf within fifteen months after the commencement of the test. In the four-years-old class and the mature class, no cow will be accepted for registration of performance if the beginning of her

6-7 EDWARD VII., A. 1907

previous lactation period was more than fifteen months before the commencement of the test.

The standard for registration of Jerseys is the same as for Ayrshires in all particulars except in the case of the production of fat, which must be ten per cent higher than for Ayrshires.

All applications for official supervision of the test must be made to the secretary of the breed association to which the animal to be tested belongs. The secretary of the Canadian Ayrshire Breeders' Association is W. F. Stephen, Huntingdon, Quebec, and of the Canadian Jersey Cattle Club, R. Reid, Berlin, Ontario.

The Canadian Guernsey Breeders' Association have accepted the principle of the Record of Performance, as outlined in the above rules and regulations, but have not yet fixed a standard for registration. It is expected that this will be done in the near future, when official testing of the cows of these breeds may be commenced.

6. *Publications*—

There have been edited and issued by the Live Stock Branch during the past winter, a report of the Second Annual Convention of the Canadian National Live Stock Breeders' Association, also a report of the meeting of the delegates from Canadian Live Stock Association, to form the National Record Board. Bulletin No. 10, of the Live Stock Branch, devoted to the production of bacon for the British market, is also ready for distribution.

POULTRY DIVISION.

Exhibits were made through this division at the fat stock shows at Amherst, N.S., and Guelph, Ont., during December, 1905. These exhibits consisted of models of poultry houses, colony houses, brooders and trap nests, charts of poultry houses, charts showing the use of trap nests, assorted eggs for market purposes, eggs suitable and unsuitable for hatching, feeding crates showing good and bad types of cockerels for fattening, birds in different stages of dressing, samples of prepared chick and poultry foods, bulletins for distribution, &c., &c. The interest in these exhibits shows a marked increase from year to year.

In January, 1906, the Chief of the Poultry Division visited the Madison Square Garden Poultry Show in New York. While in the United States a number of prominent poultry plants were seen, also the poultry department of the Connecticut State College, at Storrs. Many useful suggestions were obtained. The 'Canadian crate-feeding system,' as it is spoken of there, is becoming a topic of much interest, and in a short time will doubtless be very popular with American poultry raisers.

In February, three days' institute meetings were given in Charlotte county, N.B. Lantern views were used to illustrate the subjects. While there, farmers in the vicinity of Waweig formed a co-operative society so as to better market their poultry products. The county seems to be better adapted to poultry raising than to any other department of agriculture, and the assistance rendered by the department seemed to be very much appreciated.

SESSIONAL PAPER No. 15

A week was spent at the Poultry Institute at Guelph. To this institute the managers of the Quebec and Ontario stations were invited; the information obtained should be productive of much good in the various sections represented. Among other subjects, the hopper system of feeding growing poultry was discussed, and from what was said there and from what was seen in Connecticut and elsewhere, I believe it will be well to further try the method in Canada. Last season several of the stations fed a little out of hoppers placed in the yards, and all of them this year may feed more or less in that way. What is known as the hopper system is simply allowing the chicks or fowl to feed at will from a self-feeding box into which the dry grain is placed once a week, or as required.

The subject of co-operation in marketing poultry products was discussed at the Poultry Institute, and the opinion was expressed that in order to get satisfactory results, less competition and more co-operation would have to be practised.

From the middle of February to March 10, the Chief of the Poultry Division was in Manitoba, attending four stock shows and judging classes. These were at Killarney, Brandon, Ncepawa and Portage la Prairie. At all of these a small exhibit illustrating the work of the division was made, and illustrated lectures were delivered at the request of the Brandon Poultry Association. The interest shown was very gratifying. The fact that 33 carloads of incubators were shipped into Winnipeg last year by one manufacturing firm gives an idea of the prospects of the poultry industry.

EXPERIMENTAL FARMS BRANCH.

Since the nineteenth annual Report of the Experimental Farms was presented on November 30, 1905, the officers of the farms have been busily engaged in attending to the heavy correspondence with farmers which the winter season always brings, also with other lines of work which the cessation from outdoor employment gives the opportunity to undertake. The distributing of samples of promising seed grain for the improvement of seed among the large number of farmers who have applied for them, occupies much time and needs very careful attention. This branch of the work is growing in volume and importance every year. More than 45,000 farmers will have been supplied with such samples this year by the several experimental farms. Good seed is thus placed at a multitude of different points, and the best and most productive sorts are rapidly spread over the whole country.

Many meetings of farmers have as usual been attended during the winter months in the different provinces of the Dominion, and opportunities thus afforded of presenting some of the more important results reached through the work of the experimental farms. A novel and very effective method of reaching a large number of farmers in a short time was undertaken early this year. The unusual prevalence of smut in last year's crop of grain in the Canadian Northwest has caused considerable loss to many farmers, and as this is easily preventable, it was thought necessary that some special effort be made to call the attention of farmers to this subject and place clearly before them the nature of this disease and the remedies therefor. Weeds also have been found present in unusual quantities in the grain crop, in many cases to such an extent as to considerably reduce its value. It was most important that these questions be brought

6-7 EDWARD VII., A. 1907

prominently before the farmers of Manitoba, Saskatchewan and Alberta, and the plan adopted was to provide a special train, supply the necessary number of speakers and then visit and hold meetings at every important point accessible by railways. The Canadian Pacific Railway Company provided a special train with two cars to accommodate the audience, and dining and sleeping accommodation for the speakers, in which they lived for two months or more. These were chiefly supplied from the different branches of the department, and were assisted by officers of the Department of Agriculture of Saskatchewan and Alberta, and of the Grain Growers' Associations of Manitoba and the Northwest. Several of the officers of the Experimental Farms rendered excellent service in this train, which was under the direction of Mr. G. H. Clark, Seed Commissioner; Mr. Angus Mackay, of Indian Head, and Mr. S. A. Bedford, Superintendent of the Western Experimental Farms, gave most valuable assistance and continued with the train, addressing farmers daily during almost the whole period. Dr. James Fletcher, of Ottawa, the Entomologist and Botanist of the Dominion Experimental Farms, was also in attendance during most of the trips, and by his valued addresses and counsel contributed much to the success of this enterprise. Fuller details of his work will be found in remarks on the Division of Entomology and Botany. The Canadian Northern Railway co-operated with the Canadian Pacific, and all the chief places along both of these lines were visited. The time of arrival of the train was advertised some weeks in advance, about an hour was spent in each place and three or four places reached each day. Altogether 206 meetings were held, which were attended in all by nearly 27,000 people.

At the several branch Experimental Farms the correspondence with farmers has claimed much attention, the careful cleaning and hand-picking of the seed to be used on the experimental plots in the spring, also the samples of grain to be distributed among farmers, have involved much time and labour. On each of the two western farms a large distribution has also been made in mail packages of young forest trees and ornamental shrubs to provide shelter and objects of beauty about the homes of the settlers.

AGRICULTURAL AND LIVE STOCK DIVISION.

Agriculture.

Work in the fields being at a complete standstill in winter in this district, all that can be done so far as agricultural operations are concerned must necessarily be preparatory in character.

One line of preparatory work to which great care is given every winter is the preparation of the seed destined for the different fields in the different rotations under experiment. This work of thoroughly cleaning, selecting and testing the seed in winter has proven advantageous in two ways: (1) by insuring better seeds than would have been the case had such preparation been left till seed time, and (2) by saving time and labour when every hour is of the highest value during the seeding time.

Another important part of farm work that it has been found practicable, profitable and advisable to perform in winter is to apply the farm-yard manure either daily or from time to time as found convenient, on such fields as are due to receive the same.

SESSIONAL PAPER No. 15

The manure is spread from the vehicle if the snow be not too deep and the manure not too badly frozen. If either condition maintain it is put in small piles to be spread as early in the spring as frost will permit.

Live Stock.

As usual, breeding and experimental work with live stock was carried on to a considerable extent. Small herds of Shorthorn, Ayrshire, Guernsey and Canadian cattle are kept. They are being studied as to comparative and positive economy of milk and butter production, as well as to breed qualities, which show them fit or otherwise for general use by Canadian farmers.

Steer-feeding operations have as usual been carried on to some extent. The questions now being studied are (1) the influence of breeding on the cost of production and value of the finished product, and (2) the influence of age on the cost of production. The experiments in Baby Beef production are still under way, the results have been very interesting so far, indicating that the earlier the age at which steers may be got ready for the market the greater the chance of making a good profit, whereas steers kept for some years usually show a loss if all items of cost are considered.

Two small flocks of sheep are kept. They have so far done fairly well, although our particular conditions are not just the most suitable. Natural conditions, however, in this district are certainly very suitable for sheep-raising, and it is to be regretted that more farmers do not keep larger flocks.

Bacon production for the British market being the most profitable line of pig-feeding, this line has been followed for some years. Winter operations are usually of a character to gain information as to the economy of different feeds for breeding stock and for feeding and finishing off.

In all classes of animals the surplus stock, when of first-class quality and breeding, is sold to farmers for breeding stock, usually by private treaty.

HORTICULTURAL DIVISION.

The field work of the Horticultural Division is almost suspended for most of the winter months, as the depth of snow and frost usually prevent much work outside. The Horticulturist is, however, quite as busy in winter as in summer. The summer's notes relating to the many varieties of fruits and vegetables which have been under test and the notes of other cultural experiments, must be tabulated and made available for use either for future reports or bulletins. The same may be said regarding the large collection of trees, shrubs, and herbaceous plants, in the Arboretum and Botanic Garden, which are under the Horticulturist's care. Much of this kind of work was done last winter.

Descriptions of Varieties of Fruits.—There is now a large and growing collection of permanent cards giving original descriptions of fruits, made by the Horticulturist. These are made on cards of uniform size so that the whole collection can be arranged in the form of a card index, making it easy for reference. In addition to the many

6-7 EDWARD VII. A. 1907

named varieties which have been tested, this collection includes descriptions of seedlings sent in for examination and those grown and originated on the Experimental Farm. A large number of these descriptions was added to the collection last winter.

Grafting on Hardy Stocks.—It has been found that owing to the severe winters in the eastern part of Ontario and the province of Quebec, it is important to have the large fruits grafted on hardy stock to prevent root killing, as experience has shown that this will sometimes occur when fruits are grafted on ordinary stock. It is the custom, therefore, to graft at the Experimental Farm most of the trees required for planting in the orchards.

A limited distribution of yearling apple trees has been made each year for the past few years to points in those parts of the provinces of Ontario and Quebec where apple-growing is still in the experimental stage, and where most of the varieties hitherto tested have not succeeded, and trees for this purpose are grafted at the Experimental Farm on hardy stocks. The grafting necessary for this work was continued during last winter.

Pruning.—Fruit trees do not need as much pruning in the colder parts of Canada as they do where the winter is milder. Where large wounds are made on the trees they do not heal over rapidly and disease and rot is almost sure to set in. The best practice is to prune lightly every year in the north, so that there will be as few large wounds as possible. This practice is adopted at the Experimental Farm, and during March much of this work is done.

Meetings.—During the winter months the Horticulturist usually attends most of the provincial fruit-growers' associations and any other meetings thought desirable. During the winter of 1905-6 he attended the Provincial Fruit Growers' Associations of New Brunswick, Nova Scotia and Prince Edward Island, and was able to render much assistance to those organizations.

The correspondence of the Horticulturist during the winter months is heavier than at any other season of the year, and last winter there was a marked increase over previous years. Attending to this correspondence takes considerable time, as most of the persons who write desire some definite information on horticultural subjects.

ENTOMOLOGICAL AND BOTANICAL DIVISION.

Work in the Division of Entomology and Botany during the winter is as arduous as during the summer. A large correspondence with collectors of plants and insects keeps the officers busy naming specimens and helping other students. The observations and collections of the year have to be sorted out, arranged and classified, and the specimens put away in the cabinets for future reference. The annual report on such part of the work of the past year as it is thought advisable to publish at that time, has to be decided upon, the details worked up and the report prepared for the printer.

During the past winter a special effort was made to put the collections in order and many valuable additions were made to the herbarium of plants of scientific interest, but particularly to the collection of noxious weeds. The cabinet for weed seeds has been fitted up and many additions arranged in their proper places. This collection

SESSIONAL PAPER No. 15

is now of great value. Seeds of nearly all the weeds occurring on farms being represented, as well as the large number of seeds which are likely to be introduced through commerce, or distributed mixed with crop seeds by seedsmen. This collection has already been of much service to people wanting to know the appearance or the nature of various seeds of the plants which grow from them. Many samples of weed seeds have been sent in for identification by the Botanist.

A subject of increasing interest, particularly on the western plains, is the identity of plants which are known to be, or are suspected of being poisonous to stock, and a large correspondence on this subject has been carried on.

Publications.—In addition to the regular correspondence by letter, it is frequently necessary for the officials of the division to write articles concerning injurious insects or weeds to the daily or serial press, and several of those were prepared during the past winter. Among these may be mentioned: 'Insects Injurious to Ontario Crops in 1905,' 'The Entomological Record for 1905,' and short articles on Wireworms, Tussock Moth in Montreal, Weeds and Weed Seeds, Cockroaches, Prairie Rabbits as Food, Stink Weed in Rape, Fleas, Clothesmoths, Potato Scab, Borers in Peach Trees, Smut in Wheat, Buffalo Carpet Beetle, The Dangers of Sowing Foul Seed Grain, Horse-tail or Stagger Weed, Hay Grasses for Alberta, and an account of the work of the Seed Selection Special Train in Manitoba, Saskatchewan and Alberta, by the Chief Entomologist, Dr. James Fletcher.

A useful article on 'Insects of the Flower Garden,' preparatory to a more complete bulletin on the same subject in course of preparation was written by Mr. Arthur Gibson, Assistant Entomologist, as well as articles on 'Granary Insects' and 'Woolly-bear Caterpillars,' for nature-study students.

Work of the Seed Selection Train.—During January and February an important experiment was tried in the prairie provinces, the results of which must surely bring great benefit to the west. For some years, owing to the increase of weed seeds and contamination by smut, there has been a diminution in the value of the large crops of grain coming from the west. It was thought that good educational work could be done by sending a party of specialists in farming practice, in seed selection and the examination of seed grain for vitality, and in the detection and identification of weed seeds found in commercial crop seeds, as well as in the special methods necessary for controlling the plants which produced them. For this last branch of the work I considered Dr. Fletcher suitable, from his having made a special study of western weeds during the past twenty-three years, in which he has had opportunities of travelling frequently in the west, meeting farmers, examining their crops and the methods of working the land, and in holding farmers' meetings, where he delivered lectures on weeds and their eradication, and discussed the best methods for treatment in the various localities. Accordingly after the close of the Forestry Convention, at which his presence was required, he left for the west and joined the Seed Selection Special Train, which is referred to in detail in the Report of the Seed Commissioner, Mr. G. H. Clark. Dr. Fletcher left Ottawa on January 14 and joined the rest of the party at Red Deer on January 18. From that day until the end of the campaign, with the exception of two days, February 8 and 9, when he was too hoarse to speak, owing to a

6-7 EDWARD VII., A. 1907

bad cold, he took part regularly in all of the meetings to the end of the series, delivering altogether 145 addresses to farmers as well as eight on 'The Weed Campaign from a Nature-study Standpoint,' to the children in the public schools. These latter were given at the special request of the teachers or school trustees. The Entomologist has taken an active part in this educational movement since its inception, and has helped it not only by giving addresses but also by helping teachers and students in the identification of their specimens. The subjects dealt with, particularly by the Entomologist on the Seed Selection Special Train, were: 'The life history of the Smut fungus and remedial treatment therefor,' and 'Weeds and their Eradication.' The worst weeds in each locality were described in detail, and it was pointed out that even the worst weeds could be controlled if their nature were considered. Farmers were urged to give this matter special attention now, and it was claimed that there were only about a dozen weeds which would be found noticeably aggressive in any one place, that the nature of these could very soon be learnt, and that their control would then be a much simpler matter than under the present system of treating all in the same way. Special instructions were given for the eradication of Wild Oats, Perennial Sowthistle, Stinkweed and Canada Thistle. Particular stress was laid on the advantage of harrowing growing crops for the destruction of the seedlings of annual weeds, such as Stinkweed, Lamb's Quarters, Wild Mustard, Hare's-ear Mustard, Tumbling Mustard, &c. For this work a weeder is the best implement, but a light harrow with sloped teeth is also very suitable. The work must be done when the land is in proper condition for harrowing and when the grain plants are about three inches high. At that time the weeds are killed without any injury to the grain plants and with great advantage to the crop. Spraying mustard with a 2 per cent solution of bluestone so successful in the east was not considered a practical remedy for that weed in the west. While Dr. Fletcher was in the province of Manitoba, I was glad to be able to arrange for him to meet the wishes of the Western Horticultural Society and give them an address at their annual convention in Winnipeg on February 14.

CHEMISTRY DIVISION.

Brief reference may be made to some of the more important investigations undertaken during the past year, as follows:—

Nitrogen-exhaustion of Soils.—A number of samples of soils from Saskatchewan have been obtained from areas, the history of which as regards cropping is known. Having also collected samples of the adjoining virgin (uncropped) soils, analysis will show the degree of deterioration that has taken place during the period of cultivation. As far as the work has proceeded there is evidence of a decided character of a considerable loss in humus and nitrogen. There is in these results a warning that even our rich lands of the Northwest cannot with impunity be subjected to the system now so widely in vogue of simply cropping with grain alternated with summer fallowing, with no attempt at maintaining fertility.

Nitrogen-enrichment of Soils.—As chemistry has shown that there may be considerable loss of nitrogen due to removal of crops and irrationable methods of farming, so chemistry has demonstrated how such impoverished soils may have their fertility

SESSIONAL PAPER No. 15

economically increased through the growth of the legumes-clover, peas, &c. This matter in one or other of its phases has been the subject of research for a number of years past and data of a most valuable character have been obtained. At present the principal feature of the work is the enriching by clover of exceedingly light, sandy soils, which at the outset may be practically destitute of nitrogen and humus. The greatest difficulty lies in keeping such soils sufficiently moist and cool for the seedling and young clover plant. Once the clover shades the ground the greatest danger is past. The failure at the outset to obtain a catch of clover appears to be chiefly in the lack of organic matter, one of the functions of which is to retain the moisture in the soil. It, therefore, seems advisable on such very poor soils, if manure is not available, to sow at first buckwheat or rye, turning under the crop. Subsequently, the clover will catch, especially if helped with a little manure or fertilizer. By the growth and turning under of clover two consecutive seasons, a thin sandy loam has been enriched to the extent of 150 pounds per acre, estimating to a depth of 9 inches.

Improvement of Muck Soils.—This research is being continued. So far, drainage, the correction of natural acidity by lime, the addition of stable manures to furnish the desirable soil bacteria, the applications of phosphates and potash to supply the lacking mineral constituents for plant growth, and the admixture of clay and sand to give the necessary mechanical condition for general farm crops, have given fair results, but there is yet much to be done to bring the matter to a successful issue.

Chemical Properties of Wheat.—In conjunction with the milling operations conducted by the Cereal Division, complete analysis have been made of a number of cross-bred and other wheats. This work is being prosecuted in the hope of establishing some chemical basis for determining the bread-making quality of a flour that may accord more closely than now seems possible with the more direct and practical results obtained by milling and baking tests. This is a very important problem, and also a very tedious and difficult one. Certain very encouraging data have already been obtained, but there yet remains much to do before it can be established that there is a direct relation between the composition of a wheat and its value for bread-making.

The Soft Wheat Problem.—It is well known that in certain districts of the Northwest, soft or piebald wheat may result, even if the best No. 1 Hard be sown. This usually occurs on new land recently cleared of scrub. The cause of this development of starchy grains is not at present understood, but it undoubtedly is in some way connected with the growth and food supply of the wheat plant and is controlled by the soil and climatic conditions prevailing. In the hope of obtaining some light on the particular conditions thus influencing the wheat plant, a series of experiments has been instituted, determining the moisture-content throughout the growing season of various soils upon which wheat of good quality has been sown. It is too early as yet to draw conclusions, but there are distinct indications that the softer wheat results from the soil containing the larger amount of moisture and which we may, therefore, suppose supplies in these rich soils the larger amount of readily available plant food during the growing period of the crop.

The Action of Smut Preventives on the Vitality of Wheat.—Further experiments have been made, using various strengths of bluestone and formalin solutions. It has

6-7 EDWARD VII., A. 1907

been shown that bluestone 1 pound to 8 gallons, and formalin 4½ ounces to 10 gallons, both of which solutions are held to be efficacious in destroying smut when the treatment of the grain is thorough, are the best and safest to employ. Stronger solutions have a very marked effect in lowering the vitality of the wheat.

Pictou Cattle Disease.—There is now very strong evidence to show that this disease of obscure origin is caused by the cattle eating Ragwort—*Senecia jacobea*. With this in view, an effort is being made to isolate the poisonous principle it is supposed to contain.

Dairying Investigations.—The so-called ‘sweet cream’ process for making butter is being compared with the usual method in which naturally ripened cream is employed. The relative economy in the two systems is being ascertained and the composition and keeping qualities of the respective butters also determined.

Cattle Foods.—The composition and relative feeding value of a large number of cattle foods and so-called condimental or stock foods have been determined. During the past winter there has been a great demand for information on this subject. The number of such feeds on the market is rapidly on the increase and in many instances mere inspection gives no indication of their value.

CEREAL DIVISION.

The work of the Cereal Division from November 30, 1905, to March 31, 1906, has been chiefly in making careful selections of the most promising sorts of wheat, oats, barley and peas from the thousands of new cross-bred varieties grown at the Central Farm last season. By rigid exclusion of all the less desirable types it is hoped that the number retained for sowing this spring may be reduced to about two thousand. Among these are many kinds of great interest on account of their earliness and fine quality.

Considerable attention has also been given to milling and baking tests of standard varieties of wheat and of a number of new sorts which were available for the first time. This work, which is still in progress, includes some comparisons between hard and soft Red Fife, which are likely to be of particular interest to wheat-growers in Manitoba and the new western provinces.

POULTRY DIVISION.

The experiments conducted in the Poultry Division during the winter months are largely in the direction of the fattening of fowls for market and the feeding of such rations as will promote egg-laying at those periods when eggs command high prices, especially in December and January. It has been shown that the laying quality in hens is more a matter of strain than breed, and all the best breeds of utility type embrace within their numbers prolific as well as inferior egg-layers, and by selection of the best layers of the best market types, both qualifications may be had in the same breed.

SESSIONAL PAPER No. 15

As a means of determining which are the best layers in a flock the use of the trap-nests is essential. By this mechanical contrivance the hen when she goes to lay is shut in the nest, and cannot get out until released. Before letting her out the number on her rubber legband is noticed and recorded, and she is thus given credit for every egg she lays. At the close of the season the account is made up, when the number of eggs laid by each bird is accurately known. By retaining only those birds which lay a large number of eggs, good egg-laying strains may be built up.

HEALTH OF ANIMALS' BRANCH.

Although the operations of this branch of my department are naturally not quite as extensive during the winter months as at other seasons of the year, considerable progress has been made both in the work of eradicating contagious diseases and in strengthening the quarantine service with the object of preventing their introduction from other countries.

Several serious outbreaks of Glanders in different parts of the Dominion have been successfully brought under control, while the work of dealing generally with this dangerous and highly infectious disease has been carried on in an energetic manner. There are still, particularly in the west, a considerable number of infective centres, but with the policy of slaughter and compensation now being followed, I am confident that in the near future the disease will be brought entirely under control.

Maladie du Coit continues to manifest its presence occasionally in various parts of southern Alberta, and one outbreak has been detected near Rush Lake, in Saskatchewan. Owing to the active measures taken for its suppression and the general alarm which is felt among horsemen this disease has not spread to any very serious extent. A considerable number of animals have been slaughtered, but from the fact that the difficulty of making an absolutely certain diagnosis is very great, it is not possible to carry out extreme measures in every instance.

As will be noted in the report of the Veterinary Director General, a great deal of experimental work in connection with this disease has been undertaken and is now going on.

Hog Cholera, which has for a considerable time prevailed to a serious extent in some parts of western Ontario, appears to have been almost entirely stamped out. During the period since October 31, 1905, there have been in Ontario only four outbreaks of the disease, involving the slaughter of 54 hogs. This is a very gratifying state of affairs, especially in view of the probability of my being able as a consequence, to remove in the near future the existing restrictions upon the movement of hogs within the Dominion.

The experimental work carried on during the winter with Pictou Cattle Disease has further demonstrated the usefulness of sheep in eradicating the Ragwort which, as stated in my last report, has been conclusively shown to be the cause of this peculiar malady. It is my intention to continue the experiments with sheep, especially in view of the fact that the district in which the disease prevails is exceedingly well adapted for sheep husbandry. The extirpation of the weed by ordinary agricultural

6-7 EDWARD VII., A. 1907

methods is, owing to the nature of the country, a practical impossibility, so that if it can be shown that sheep eat the weed with impunity a double benefit will be conferred on the district by the introduction to it of large numbers of these useful and profitable animals.

The dipping operations for the suppression of Mange conducted during September and October by the officers of this branch in the provinces of Alberta and Saskatchewan have proved highly beneficial. The stock on the ranges has wintered better than ever before and a very large number of owners continue to express their intention to dip their cattle voluntarily during the coming season. It has not yet been decided to reissue the compulsory Order which has been in force during the last two seasons, but if it is found possible to deal with isolated outbreaks in an effective way it may not be necessary to insist on general treatment.

No change has been made in the policy of the department with reference to Tuberculosis. An interesting experiment is, however, being conducted with a view to ascertaining the effects of open air treatment on cattle affected with the disease, although not in an advanced stage. The application of the tuberculin test to the cattle on the Experimental Farm at Nappan, N.S., in October last, revealed the fact that a very considerable number of them were infected with Tuberculosis. At the request of the Veterinary Director General a number of these animals have been set aside for experimental purposes. They have been kept during the winter in the open air and it is my intention to continue this method of dealing with them with a view to discovering, firstly, what the effect will be on the diseased animals themselves; secondly, the extent to which the disease is transmissible to healthy animals under open air conditions; and, thirdly, the possibility of rearing sound progeny from diseased parents under like circumstances. An experiment of a somewhat similar nature is also being conducted at the Central Experimental Farm, although in this case healthy cattle only are used. In this experiment a number of animals are housed under conditions which ensure at all times a plentiful supply of pure air, although affording absolute protection from draughts. The object sought is to determine whether or not the high temperature generally insisted on by dairymen and cattle feeders has the effect with which it is usually credited of maintaining a high yield of milk in cows and a more rapid laying on of flesh in fattening stock than is the case when mere warmth is made subordinate to thorough ventilation. From the extreme mildness of the past season, the conditions have been less favourable for demonstration purposes than they would have been in a normal Canadian winter. The cost of this experiment being trifling, I hope to be able to continue it for several successive years, as the point at issue is one of great importance to our stock owners.

The serious outbreak of Sheep Scab which occurred during the winter of 1904-5 has been apparently brought under complete control. A few affected animals were detected in a consignment of sheep and lambs shipped to the Toronto market during March. The disease was, however, promptly traced to its source, and it is not expected that any serious results will follow.

The importance of the Biological Laboratory in the work of the Health of Animals' Branch continues to be highly appreciated not only by our own officers but by other veterinarians and stock-owners generally. The number of pathological specimens

SESSIONAL PAPER No. 15

forwarded for examination is constantly increasing, while the various preparations which are now manufactured in this institution effect a large saving in our annual expenditure.

The only important change in the Quarantine Regulations consists of the order passed on November 29, 1905, which practically forbids the importation into Canada of hogs for immediate slaughter. During the summer of last year a considerable trade had sprung up in American hogs which were being imported for slaughter in Canadian packing houses. As this trade was a very dangerous one, I thought it my duty to advise the amendment of the regulations by the passing of the order above mentioned, which provides that all swine imported from the United States must be accompanied by a certificate signed by a veterinarian of the Bureau of Animal Industry stating that no Swine Plague nor Hog Cholera has existed within a radius of five miles of the premises on which they have been kept for a period of six months immediately preceding the date of shipment. Such swine shall nevertheless be inspected and shall be subjected to a quarantine of thirty days before being allowed to come in contact with Canadian animals.

Full details of the work of this branch are furnished in the report of the Veterinary Director General, which is this year published as a separate appendix.

ARCHIVES BRANCH.

The new building for the reception and preservation of the records of the Crown is not yet complete, but I have reason to believe that the documents will be removed thereto before the close of the summer. In the meantime, progress has been made with the index of the volumes that are deposited in the Langevin building, and considerably over 300,000 cards for these documents have been made and arranged for use. It is estimated from the work already accomplished, that at least fifteen million cards will be necessary to form a reasonably complete index of the volumes in current use. To provide for this indispensable work, I intend to ask for an increase in the appropriation for this branch and to employ a larger staff of temporary assistants.

Last year I referred to the investigation commenced by this branch, of the archives of the Dominion, with a view of publishing a guide to the sources of Canadian history. From the work which has been already done in the maritime provinces, in the province of Quebec and in the west, it is found that there is a vast amount of historical material which should be brought to the notice of students with as little delay as possible. Work in connection with this guide is therefore to be commenced in several centres, and men will be appointed to examine the archives in Montreal, Three Rivers, Toronto and the Northwest. The ground to be covered is extensive, but it is necessary to visit even remote places, because records are occasionally found in unexpected places. The only satisfactory plan is to do the work thoroughly.

In the early part of the winter the Archivist made a visit to the south, taking in several places along the Mississippi valley. The result of his investigation is given in the first volume of his report for 1905, which is in the hands of the printer.

6-7 EDWARD VII., A. 1907

An examination will be made, from time to time, of the archives of other parts of the United States, and by this means we hope to acquire a valuable collection of records.

Research in Europe has been satisfactory. We have added somewhat to our knowledge of the early voyages, besides acquiring a number of new records relating to the French Regime and the earlier years of the 19th Century.

Records are being copied in the Public Record Office, in the General Post Office, in the Hudson's Bay Company's Office, and in other places. Transcripts will be made of the Townshend and Chatham papers, and of the Selkirk and Durham papers in Scotland.

The Archivist has suggested that a systematic search should be made for papers in the hands of descendants of prominent families connected with Canadian history. This, I believe, is a practical suggestion to which we should endeavour to give effect.

For this year it has been found desirable to publish the report in three volumes, the first volume will contain the report of the Archivist, including a summary of the records examined in the United States, a number of the instructions to Governors, new documents concerning Prince Edward Island, a summary of the documents examined in Paris, and a Genealogy of the families of La Beauce.

The second volume contains a census of the maritime provinces in 1752, a genealogy of the families of Orleans, and the first instalment of the work of Mr. Placide Gaudet in connection with the Acadian Genealogies and documents relating to the Expulsion.

The third volume, it is suggested, should be printed in somewhat different form. It is to include documents relating to the Constitutional History of Canada. The Archivist has provided an extensive index to each volume, and although it has involved much extra work, it will, I am sure, be appreciated by all who have occasion to consult the volumes.

The work of this branch has assumed large proportions, but there is a widespread desire for a correct knowledge of our past, and for the publication of materials for the History of Canada.

Any expenditure made now while the records are available will be appreciated by future generations, even more than by our own. In order to give effect to many of the suggestions which have been made, it is necessary to increase the appropriation to the extent given in the estimates.

During the past five months we have received the following volumes.

SESSIONAL PAPER No. 15

LONDON OFFICE.

Nova Scotia Colonial Correspondence—		Vol.
Lieut.-Gov. Sir John Wentworth, 1800	1	
“ “ “ 1802	1	
Lieut.-Gov. Sir John Wentworth and Miscellaneous, 1802	1	
New Brunswick Colonial Correspondence, 1801-1802		1
Lieut.-Gov. Thomas Carleton, 1804-1805	1	
Prince Edward Island—		
Lieut.-Gov. Ed. Fanning and Miscellaneous, 1802-1803	2	
Board of Trade and Plantations, general and names of persons naturalized, 1761	2	
Board of Trade, Mass., MSS., 1750, Foreign Office, France	1	
Total		10
Sundry papers copied at the general post office, 1 roll and 1 parcel . .		

PARIS.

Correspondence Générale, vol. 121	1
Castor, Commerce, Ferme d'Occident Sous-ferme de Tadoussac, Series C.	2
Memoires sur le Canada attribués a M. Raudot.	1
Louisiane, Series G, vol. 464, Passengers, 1719-1722.	1
“ “ 464, Concessions, 1735.	1
“ “ 465, Recensements, 1720	1
“ “ 466, Concessions, 1742	1
Ile Royale, Louisbourg, Concessions, 1720-1723	1
Ordres du Roi, Series B, vol. 1, 1663-1669.	1
“ “ 2, 1670.	1
“ “ 3, 1671.	1
“ “ 4, 1672.	1
“ “ 5, 1673.	1
“ “ 6, 1674-1675	1
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Total	15

III.—PATENTS OF INVENTION.

The following tables show the transactions of the Patent Branch of the Department of Agriculture from November 1, 1905, to March 31, 1906:—

Applications for Patents.	PATENTS AND CERTIFICATES GRANTED.			Caveats.	Assignment of Patents.
	Patents.	Certificates.	Total.		
2,857	2,378	271	2,649	137	1,232

DETAILED STATEMENT, Patent Office Fees.

Patents.	Assign- ments.	Caveats.	Copies.	Subscription to Patent Record.	Notices to Apply for Patent.	Sundries.	Total.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
64,116 12	2,749 65	695 75	1,029 69	221 30	794 50	93 45	69,700 46

The following is a table of the countries of residence of the patentees:—

Canada.	England.	United States.	France.	Germany.	Other Countries.
332	155	1,717	20	52	112

The Canadian patentees were distributed among the provinces of the Dominion as follows:—

Ontario.	Quebec.	New Brunswick.	Nova Scotia.	Prince Edward Island.	Manitoba, Saskatchewan and Alberta.	British Columbia.
186	74	5	12	0	27	18

PERIOD FOR WHICH FEES WERE PAID ON FIRST ISSUE.			PATENTS ON WHICH CERTIFI- CATES WERE ATTACHED AFTER ISSUE.		Re-issues.	Notices under Section 8.
6 years.	12 years.	18 years.	6 years.	12 years.		
2,363	3	12	250	21	2	397

IV.—COPYRIGHTS, TRADE MARKS, INDUSTRIAL DESIGNS AND TIMBER MARKS.

STATEMENT of fees received by the Copyright and Trade Mark Branch, from November 1, 1905, to March 31, 1906.

Months.	Trade Marks.	Copy- rights.	Designs.	Timber Marks.	Assign- ments.	Copies.	Totals.
1905.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
November.....	2,136 40	108 00	80 00	12 00	34 00	47 50	2,417 90
December.....	1,865 00	141 50	100 50	6 00	8 00	20 50	2,141 50
1906.							
January	2,232 90	125 50	60 00	7 00	28 00	22 50	2,475 90
February.....	2,438 15	139 00	65 00	4 00	22 50	63 75	2,732 40
March.....	2,763 12	156 00	86 00	8 00	18 00	40 75	3,071 87
Total.....	11,435 57	670 00	391 50	37 00	110 50	195 00	12,839 57

The particulars of the registrations made by the Trade Mark and Copyright Branch during the five months ended March 31, 1906, are as follows:—

I. Copyrights—	
Full copyrights without certificates..	324
Full copyrights with certificates	76
Temporary copyrights without certificates	4
Temporary copyrights with certificates	3
Interim copyrights without certificates..	25
Interim copyrights with certificates..	8
Total copyright registrations..	440
II. Trade marks	281
Renewals..	1
III. Industrial designs	64
Renewals	3
IV. Timber Marks	14
V. Assignments..	68
Total registrations	871

6-7 EDWARD VII., A. 1907

V.—PUBLIC HEALTH AND QUARANTINE.

During the five months since my report dated October 31, 1905, the most noticeable events in Public Health generally have been the subsidence of Yellow Fever in the southern United States, and of bubonic plague in South Africa, and on the other hand the seasonal increase in bubonic plague in Japan and Hong Kong.

Since 1894 the seasonal recrudescence of this disease in Hong Kong, commencing at about this period of the year, has been an annual occurrence.

The health report from Hong Kong for the week ending on the 31st instant gives 27 cases and 25 deaths from bubonic plague.

In South Africa the last plague infection in the colony was discovered at Port Elizabeth in man, on November 18, 1905 (the case being discharged on December 29, 1905), and in rodents on January 22, 1906. The issue of special health reports at Cape Town, Cape of Good Hope, was therefore suspended on the 10th of this month.

In the fight against yellow fever in the United States last year, the United States Health and Marine Hospital Service was called in to assist some of the state authorities and gave most efficient assistance. As a sequence, if not as a result, of this, the United States government passed an Act last month to give the federal authorities control of maritime quarantine with regard to yellow fever, and appropriated \$500,000 for the purpose of carrying into effect the provisions of the Act.

Bubonic plague has occurred during the last five months in Afghanistan, Africa, Argentina, Australasia, Australia, Brazil, Chile, China, Egypt, Formosa, Hawaii, India, Japan, Mauritius, Paraguay, Persia, Peru, Philippines, Russia, Straits Settlements and Zanzibar.

Asiatic cholera has prevailed principally in India, the Philippine Islands and Russia.

Smallpox has continued almost world-wide. A local outbreak south of Mission Junction, in British Columbia, caused me to appoint a special temporary medical inspector at the frontier south of that place. He was appointed on the 5th of last month.

The question of the assumption by the Dominion government of the care of lepers in Canada generally, and of those at the leper colony at Darcy Island, B.C., in particular, has been engaging my attention, and it is probable that legislation to that end may be introduced this session.

Circulars of warning and instruction have been sent to my coast and frontier public health officers from time to time, as occasion demanded.

The St. Lawrence Quarantine station has had the Marconi wireless telegraphy installed. The first message passed between the Citadel of Quebec and the station, 31 miles below, on the 7th of this month. This new appliance will prove of very great value, both to the service and to the shipping.

The diseases which have been brought to the maritime quarantine stations during the last five months are: Measles, chickenpox, diphtheria, tuberculosis, beri-beri and smallpox.

SESSIONAL PAPER No. 15

VI.—CENSUS AND STATISTICS.

The Census and Statistics Office has been employed during the past five months in the preparatory work required for taking the census of Manitoba, Saskatchewan and Alberta, the date of which is fixed for the 24th day of June at the hour of midnight; in the completion of tables for bulletins to show the wage-earnings of the people under the headings of Manufactures, Agriculture, Commerce, Transportation, and the Professional, Domestic and Personal Occupations; and in compiling an entirely new series of tables for the Canada Year-book. It has been employed also in the preparation of Criminal Statistics, the volume of which for the year ended September 30, 1904, was issued in January; as well as in the collection of statistics for the manufacturing industries of the Dominion for the year 1905. The fourth and concluding volume of the Census of Canada, 1901, was sent to the printer in September, 1905, and was issued from the office of the King's Printer in March, 1906. The office was moved in the month of March into the new apartment provided for it on the sixth floor of the Canadian Building on Slater street, east of Elgin street.

The whole respectfully submitted.

SYDNEY A. FISHER,
Minister of Agriculture.

APPENDIX No. 1

THE PUBLIC WORKS
(HEALTH) ACT, 1899

AND THE
REGULATIONS ESTABLISHED THEREUNDER BY ORDER IN COUNCIL
DATED 3RD MARCH, 1906.

62-63 VICTORIA.

CHAPTER 30.

AN ACT FOR THE PRESERVATION OF HEALTH ON PUBLIC WORKS.

[Assented to August 11, 1899.]

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. The expression ‘public work’ or ‘work’ in this Act means and includes in addition to every public work of Canada, every railway, canal, bridge, telegraph and other work within the legislative authority of the parliament of Canada.

2. The Governor in Council may, from time to time, make regulations for the preservation of health and the mitigation of disease among persons employed in the construction of public works, and any regulations so made may be either general or special, applying to all such public works or to all of a named class, or applying only to one or more public works named therein.

3. Such regulations may provide—

(a) as to the extent and character of the accommodation to be afforded by the houses, tents, or other quarters occupied by the employees on the works;

(b) for the inspection of such houses, tents or other quarters, and the cleansing, purifying and disinfecting thereof where necessary;

(c) as to the number of qualified medical men to be employed on the works;

(d) for the provision of hospitals on the works and as to the number, location and character of such hospitals;

(e) for the isolation and care of persons suffering from contagious or infectious diseases;

and make such other provisions for the attainment of their object as the Governor in Council thinks proper.

4. The Governor in Council may until parliament otherwise provides prescribe punishments, penalties and forfeitures for breach or non-observance of such regulations, and may also prescribe the procedure for enforcing the same: Provided, that no punishment by way of imprisonment to be prescribed by the Governor in Council shall

6-7 EDWARD VII., A. 1907

exceed three months, and that such punishments, penalties or forfeitures shall be prescribed in addition to any others to which under the criminal law the offender may be liable.

5. Any orders in council or regulations made under the authority of this Act shall be laid on the tables of both Houses of Parliament within fifteen days after the opening of the next following session of parliament.

6. This Act may be cited as the *Public Works (Health) Act, 1899.*

AT THE GOVERNMENT HOUSE, OTTAWA.

Saturday, the 3rd day of March, 1906.

PRESENT : HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL.

The Governor in Council, in virtue of the provisions of section 2, chapter 30, 62-63 Victoria, entitled 'An Act for the Preservation of Health on Public Works,' is pleased to order that the order in council of the 13th May, 1901, making regulations for the preservation of health and the mitigation of disease among persons employed in the construction of public works, shall be and the same is hereby rescinded, and the following regulations shall be and are hereby established in lieu thereof.

JOHN J. MCGEE,

Clerk of the Privy Council.

1. There shall be appointed by the Governor in Council under the above-mentioned Act an inspector or inspectors whose duty it shall be,—

(a) To see that the regulations under the said Act are enforced and complied with on every work to which they are applicable.

(b) To report to the Minister of Agriculture monthly and at such other times as may be required.

(c) To recommend to the Minister of Agriculture from time to time such additions and changes in said regulations as shall the more effectually promote and secure the intent and object of the Act.

(d) To act as chairman when present at meetings of health boards.

(e) To notify the Minister of Agriculture of all cases of infectious diseases on such works.

(f) To receive reports from the medical staffs engaged upon such works.

2. In cases where it is found difficult for the inspector appointed under section 1 of these regulations to give the necessary personal attention to the enforcement of the regulations on any particular work, the Governor in Council may appoint another officer to be inspector under these regulations for and in respect of the particular work referred to, and all provisions of the regulations shall be held to apply to and include such specially appointed inspector as if he were the inspector appointed under said section 1.

3. The expression 'the company' in these regulations means and includes any company, persons or person contemplating the construction or engaged in the construction of any work within the meaning of the said Act, whether such work is to be constructed or is being constructed by them or him directly as proprietors or proprietor or for them or him by contractors or otherwise.

4. Every government department or company before entering upon the construction of any work within the meaning of the said Act shall notify the Minister of Agriculture in writing of the intention so to do, and shall in such notification describe clearly the character, location and dimensions of the contemplated work, state the

SESSIONAL PAPER No. 15

number of men likely to be employed thereon, the name and address of the contractor or contractors and of the district medical officer proposed to be put in charge thereof.

(a) Every government department or company upon the cessation or completion of any work within the meaning of the said Act shall notify the Minister of Agriculture of the same.

5. Every government department or company shall, before the commencement of any such work, provide each and every one of its contractors, engineers and medical officers, whose duties are prescribed herein, with a copy of these regulations.

6. There shall be at least one duly authorized medical man engaged by the company constructing any such work to attend the men employed thereon where the number of employees exceeds 75, but does not exceed 500, and where they are located within a distance of thirty miles and are living in houses, tents or other quarters provided by the company or any contractor under it and not in their own homes.

(a) There shall be an additional medical officer appointed as above, where the number exceeds 500 men until it reaches 1,000 men, and so in the proportion of one medical officer to every 500 men employed upon the work, each properly supplied with medicines and means of conveyance; provided that the district of each medical officer shall not exceed thirty miles in length; provided further that the inspector, by writing under his hand, may alter the size of the district and increase or decrease the number of men allotted to each medical officer under special circumstances that may warrant such change.

(b) The inspector may, with the approval of the Governor in Council, in special circumstances, require the company to provide a duly authorized medical officer to his satisfaction for a less number than 75 men and for an additional medical officer for less units of increase than 500.

(c) The company may appoint divisional medical officers to look after and supervise the district medical officers, and also a chief medical officer or officers with medical supervision over all or part of their works.

(d) All matters of importance under the Act shall be reported by the medical officer to the inspector.

(e) All medical officers shall forward to the inspector on the last day of June, September, December and March respectively, reports upon the work under their charge, the reports of the district medical officers to be on the printed forms provided for the purpose by the department.

7. The health board for any such work shall consist of the inspector, the medical officers or officer engaged on the work, the government engineer in charge of the same, if there be one, and if not, or in his absence, any engineer engaged on the work, or designated by the government.

(a) A quorum of the health board shall consist of at least three members, of whom, in the absence of the inspector, the government engineer on the work or other engineer, as the case may be, shall be one; provided that where two medical officers cannot conveniently meet, an additional government or other engineer may complete the quorum; provided that in case of the absence of the inspector and there being only one government or other engineer and one medical officer, the chief officer of the company may be called upon and constituted the third member of the board to complete the quorum; provided that any act of the board shall be subject at all times to be revised or superseded by the Minister of Agriculture.

(b) It shall be the duty of the Health Board or a member thereof to inspect the houses, tents or other quarters so provided by the company or contractor and occupied by the employees within ten days after occupation and at least once in every two weeks thereafter during the progress of the work, to prevent overcrowding, to see to necessary provisions for heating and ventilation, and to cause such houses, tents or other quarters to be cleansed, purified and disinfected when necessary, and it shall be the duty of each district medical officer to visit each camp in his district at least twice a

6-7 EDWARD VII., A. 1907

week and so to regulate his visits and give notice thereof in each camp that it may be known where he may be found on each day of the week as far as the circumstances of the case will permit.

8. Where there is no hospital or no hospital with suitable or sufficient accommodation within reasonable distance of any such work the company constructing the work shall establish one or more base hospitals having a qualified medical officer in charge, sufficient medical and surgical supplies, nurses and attendants at such place or places as the Inspector, or in his absence the Health Board may determine, but so that a patient shall not be compelled to travel more than the said board may deem to be reasonable to reach the same.

(a) The company shall also provide, when called upon so to do by the inspector, temporary hospitals sufficient to accommodate at least six patients or more if necessary, with sufficient medical and surgical supplies, under charge of the district medical officer, who must employ nurses and attendants therefor when necessary at the expense of the company, such hospitals to be located near the camp or camps for which they are to be used.

(b) The company shall also provide for each camp a building or tent supplied with stove, bed and bedding and attendants suitable to accommodate at least six patients, to be used for infectious or contagious diseases, this building or tent to be enlarged as occasion may require and to be erected not less than two hundred yards distant from any building, tent or camp.

9. The company, where a sufficient supply of pure drinking water cannot be otherwise obtained, must have wells dug at each camp to secure the same, such wells to be located to the satisfaction of the medical officer in charge of the works.

(a) Or, the company may provide an apparatus to boil a sufficiency of water to be served in a cooled state for drinking purposes to their employees, the whole to the satisfaction of the medical officer in charge.

(b) The company shall not permit any employee or person to bathe, wash or cleanse any clothing or other material in any well or pool from which water is drawn or used for drinking or culinary purposes, nor in any stream from which water for such purposes is taken except at such point or points as may be approved of by the medical officer.

10. The company shall provide at each camp latrines, earth or other closets, located, constructed and maintained in a sanitary condition satisfactory to the medical officer of the works.

11. The company or contractor may charge 50 cents per man per month, and deduct the same from the employee's wages, to recoup it or him for the cost of medical attendance, hospitals, medicine and the expenses incident thereto directed by said regulations, and such employee shall be entitled to the medical service and attendance herein directed without further charge.

(a) The company shall be liable for the payment of any medical officer employed under the regulations to attend any employee or employees on such works, for the removing, housing, nursing and maintenance of such employee or employees, and for medical, surgical and other supplies required for him or them, and the government will not on any condition be responsible for the payment of the same.

12. In the event of any person employed by the company or by the contractor for the work or any part thereof being suspected of having an infectious disease it shall be the duty of the district medical officer in charge, the company and also of any contractor in whose camp such patient is employed to immediately isolate such person two hundred yards from the nearest house, tent or camp and to supply him with proper food and attendance until removed.

(a) It shall be the duty of the district medical officer in charge to take prompt and effectual means for the complete isolation of such patient, to remove him, where possible, to the isolation tent or building adjacent to the nearest temporary hospital

and to use all possible means to prevent the infectious disease from spreading, and forthwith to notify the inspector or the government engineer in charge of the work.

(b) It shall be the duty of the company and also of such contractor to convey him to the temporary hospital without charge, and it shall be the duty of the company and also of such contractor to provide the patient with such medical attendance, medicine, board and lodging whether at a temporary or other hospital as may be requisite and necessary until the patient is discharged.

13. In the event of any person employed on any such work dying from any cause whatsoever it will be the duty of the company and also of the contractor in whose camp the person has been employed to at once notify the inspector or the government engineer in charge, or other engineer acting in his place. And the said inspector or government engineer or other engineer acting in his place shall, through the Health Board or the medical officer where such shall have been appointed (or himself where there is neither Health Board nor medical officer) cause such precautionary measures to be taken in connection therewith as may seem expedient for the protection of the health of the remaining employees.

14. It shall be the duty of such medical officer to promptly notify the inspector and the government engineer in charge or other engineer acting in his place or (in case there is no government engineer upon the work) the chief engineer of the company or the contractor on the works of all matters that require the attention of the board, and the board shall meet without delay and promptly deal with all matters requiring attention.

(a) It shall be the duty of every medical officer employed on any such work and every government engineer in charge of the work to assist the inspector in carrying out the regulations in force for the time being under said Act and to report to him promptly every breach and non-observance of the same.

15. For every breach or non-observance of any of the foregoing regulations the persons so offending shall on summary conviction before a justice be liable to a fine not to exceed \$100 or to imprisonment for any term not to exceed three months, or both, and the procedure provided by Part LVIII. of the Criminal Code as amended shall be applicable to all cases of prosecution for breach or non-observance of these regulations.

(a) The conviction of any person for breach or non-observance of the regulations in force under said Act shall not be a bar to any action or suit which may be brought against such person for neglect of duty under said regulations or where otherwise maintainable.

16. In every contract for any work coming under the application of the above mentioned Act it shall be stated that such contract is subject to these regulations.

17. Any person or persons aggrieved through the non-fulfilment of these regulations may make a complaint in writing to the Minister of Agriculture, Ottawa, but such writing must define clearly the nature of the complaint, the location of the work and give the names of the medical officer and company or contractor in charge.

18. These regulations shall apply to every 'public work' or 'work' as defined in clause 1 of the said Act, whether carried on by a company or contractor or under the direct charge of the government.

6-7 EDWARD VII., A. 1907

(Form of report referred to in subsection (c) of section 6 of the Public Works (Health) Regulations.)

.....190..

SIR,—I beg to submit my report as under for the quarter endedas District Medical Officer of the camp described below:—

Name and address of government department, company or proprietor.

Class and extent of work

Name and address of chief contractor

Name and address of sub-contractor.. . . .

Number or name and location of camp.. . . .

Number of employees thereat.. . . .

How and by whom housed

How and by whom boarded.. . . .

Medical fee collected, per man, per month

Contagious and infectious diseases

Accidents

Deaths.. . . .

General health

Hospitals.. . . .

Water supply

Latrines

General sanitary conditions

General remarks

Signature

District Medical Officer,

Address.....

To the Public Works (Health) Inspector,
Department of Agriculture,
Ottawa.

Copies of preceding regulations and blank forms of report for the District Medical Officers may be obtained by application to the Public Works (Health) Inspector, Department of Agriculture, Ottawa, Ont.

APPENDIX No. 2.

REPORT ON LIEGE EXHIBITION.

SIR,—I beg to report to you as follows regarding Canada's participation at the Liège exhibition, which opened on April 21 and closed on November 6, 1905:—

According to your instructions, we endeavoured to make the Canadian exhibition at Liège a Dominion exhibit and to avoid in the display of our products anything having a provincial character.

There is every reason for believing that Canada's exhibit at Liège has made a telling and most favourable impression upon the people of Europe. The fact that Canada stood as a distinct country in her participation at the exhibition was a matter of comment from the public.

Among the hundreds of thousands of visitors that were welcomed in the Canadian pavilion at the Liège exhibition, a very few only knew that across the Atlantic there existed a country called Canada.

This want of knowledge and erroneous ideas about Canada and its resources are not surprising, considering that in the maps and text-books used in public schools of European countries, one can hardly find any mention of Canada.

The press at home and abroad have already during the season described the Canadian pavilion. The general commissioners of the countries participating in the Liège exhibition, the president and officials of the exhibition, newspapermen and the public, were all unanimous and emphatic in saying that the Canadian pavilion was the most conspicuous government building on the fair grounds, and our exhibit one of the main features of the Liège exhibition.

For the purpose of increasing our trade relations, as well as from an immigration point of view, no better country than Belgium nor a better location than Liège could have been chosen for a Canadian exhibition.

In proportion to its population, Belgium is the wealthiest and greatest industrial nation of the European continent.

The leading industries of Belgium are her metallurgical works, where all the known metals are employed for one purpose or another, and the whole country is dotted with innumerable factories, some of them giving employment to thousands of men.

As a large part of the population is interested in metallurgy, our mineral exhibit attracted the attention of capitalists, mining engineers, university students and the general public.

It was nearly of daily occurrence that professors of universities would bring their students to our pavilion to view our mineral exhibit and make use of our display of ores as object lessons to instruct their classes. In several instances we opened our pavilion earlier in the day to accommodate these people.

Favourable comment was heard on all sides upon the classification of our minerals, the catalogue of which reflects great credit on Mr. R. L. Broadbent, who had charge of this department.

There is no doubt that the telling feature of our mineral exhibit was the great number of large-sized blocks of ore we displayed, as it plainly showed to the observing visitors the thickness of the vein as well as the richness of the mine.

This fact was plainly illustrated by our display of huge blocks of nickel, asbestos, mica, and especially cobalt, which even created more interest than at St. Louis, where

6-7 EDWARD VII., A. 1907

cobalt was exhibited for the first time in commercial quantities. Judging from the inquiries we had from mining men and capitalists, there is no doubt that in the very near future a large amount of European capital will be invested in our mining industries.

Since the outbreak of the Russian-Japanese war, Belgian capitalists have lost over 75,000,000 francs in Russian investments. French and other capitalists have also lost heavily.

These capitalists are now turning their attention to other countries and particularly to Canada for the investment of their capital. They are now realizing that Canada, on account of its great agricultural, mineral and forest wealth, her unequalled railway, lake and river transportation facilities, the great possibilities for ocean transportation, and the unparalleled expansion of her industries, affords the most desirable field for investments.

It is not generally known that zinc ore from Canada is shipped to European middlemen or companies who sell this ore to Belgian or German smelter owners; many of these smelter owners only learned through our exhibit that the ore they used came from Canada.

Another interesting fact is that Canada's silver lead ore is shipped to Belgium and after the silver is extracted, a large proportion of pig-lead is shipped back to Canada.

About our exhibit of corundum we had many inquiries, and from what we learned the general opinion in Liège was that corundum from Canada is the best in the world. In the Machinery Hall, where corundum wheels were exhibited, one could see wheels made from Turkish, Grecian and Canadian raw material. When making inquiries as to the relative value of each product, the answer was invariably: 'Canada corundum makes the best wheels.'

Wheels from Canada corundum are now being used successfully in grinding armour plate.

Corundum has lately come into use for cutting glass, and by what we learn from people in this line of business, there are other and more important uses for this product, with which experiments are now being made.

Liège is a great industrial city and on account of its geographical position is the gateway of travel and commerce between western and eastern Europe.

One of the advantages of Belgium from an exhibition point of view is its proximity to France, Germany, Holland and the Netherlands, where emigration propaganda is either forbidden or only tolerated with such restrictions that Canada cannot do in these countries any practical emigration work.

As the Canadian pavilion was visited by thousands of people from Germany, Holland, Sweden and other European countries, to whom we gave information about Canada, and who carried back to their homes our atlases and other pamphlets printed in French, English, German and Flemish, we may reasonably infer that the visitor taking home our literature is an active agent for Canada and makes in his own country the propaganda we are not allowed to make ourselves.

Another gratifying feature is that we saved a considerable amount of postage by this personal distribution of our literature, of which we used over 400,000 copies.

I may say that within a radius of 200 miles from the Liège exhibition, which comprises a dense agricultural population, there is hardly a village or rural district where our atlases and our literature could not be found, or where Canada and her products had not been discussed.

The demand for our atlases and pamphlets was something extraordinary and amounted some days to frenziness. We had on several occasions to employ the whole of our staff and hire special policemen to keep the crowd in order; so great and eager was the rush to obtain our literature that we were obliged many times to close our pavilion to relieve the situation and avoid accidents.

SESSIONAL PAPER No. 15

Our mounted specimens of fish and game were constantly surrounded by a gazing crowd. There is a great demand for fish in Europe, and it commands a high price.

The fact that we advertise our fisheries as producing twenty-three million dollars yearly was a great surprise to the visitors.

Our agricultural exhibit was practically the only extensive display of farm products that could be seen at the Liège exhibition, and caused much admiration and favourable comments. The farm lands in Belgium and neighbouring countries are exhausted through centuries of constant cultivation and only bear crops when heavily fertilized. That Canada can produce such grains and grasses as we exhibited without the aid of fertilizers, seemed incredible to European farmers.

We have certainly stirred the farming population with our picture gallery representing farming and ranching scenery in the Northwest. These tableaux being practically verified by the grains and grasses we exhibited, have left a lasting impression on young and old. Thousands of our visitors have expressed their desire to take advantage of our offer of a free gift of 160 acres in the Northwest as soon as they could arrange their affairs.

Positive instructions were given to the staff to keep close to actual and proved facts in giving information about Canada and not to give a rosy view of our country to induce people to become Canadian settlers. Would-be emigrants were invariably warned against coming to Canada in the late fall or in the winter season, and were advised not to leave their own country if satisfied with their present conditions.

Our forestry exhibit was one of great curiosity and interest to the visitors, and the members of our staff were kept busy answering queries about our different woods.

Our fruit display was one of the drawing cards of our exhibit, as it was the best evidence of the mildness of our climate. The beauty and variety of our Canadian apples was the general topic of conversation among the visitors, and there was much speculation as to how we could keep them in such good condition for over a year. Good apples are considered a luxury throughout Europe and bring high prices. Our finely flavoured fruit will hereafter be in great demand in Belgium and surrounding countries. We can safely increase our orchards and Europe will take all the good apples we can export.

It is evident from the numerous inquiries we had from visitors and through letters received from merchants, manufacturers and other interested parties about our fruits, canned goods, cereal food, butter and cheese, lumber and mineral ores, that our trade relations with the continent of Europe will be extensively increased.

We may look forward with confidence for a great amount of emigration from central Europe to Canada. The people of Europe are now realizing that Canada is a more desirable country to emigrate to than the South American, African and other countries. And when shown the remarkable exodus of people now going on from the western parts of the United States to our great Northwest, the effect is more than convincing.

We have won eight grand prizes for our agricultural, horticultural, forestry, fish and mineral products at the Liège exhibition, where 36 different nations vied with each other for supremacy.

I have the honour to be, sir,

Your obedient servant,

WM. HUTCHISON,

Exhibition Commissioner.

To the Honourable SYDNEY FISHER,
Minister of Agriculture of Canada,
Ottawa.

